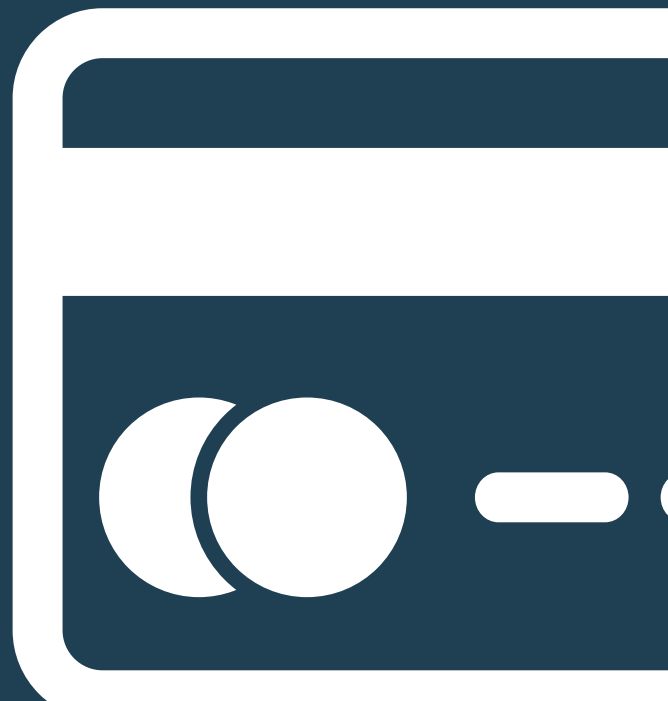


○ Tapping into progress:

○ Reimagining sustainable transport with an intermodal ticketing revolution.

○ January 2024



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About the Author



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Harry is the Joint Chief Executive and Founder of Enroute, responsible for corporate affairs, company strategy, recruitment, campaigns, mergers, and administration. Harry works in the transport sector full-time, and is also Young Persons Ambassador at the Rail Forum, the rail industry body. Harry founded Sustainable Transport Midlands, the predecessor to Enroute, in early-2021, with his original campaign being to open a Daventry Parkway station on the West Coast Main Line.

○ Introduction and Background



The current fragmentation of paying for public transport

Across the quite diverse tapestry of Great Britain, navigating sustainable transport often resembles traversing a maze. Trains, buses, trams, and metros crisscross the nation, but these are a disjointed system of ticketing, payment, and at the end of the day, management. This fragmentation poses a significant barrier to seamless travel, disincentivises travelling by sustainable modes, and creates unnecessary complexities for passengers.

Imagine embarking on a multi-modal journey, hopping from a bustling Northern line train to Euston, taking the train from Euston to Tring, to get onto a countryside bus to Aylesbury, and gliding on an e-scooter to your final destination. Each leg requires a separate transaction, a different ticket, and in some cases, an entirely different payment method. This cumbersome dance with countless payment systems and operators discourages intermodal travel, pushing many towards the convenience of personal cars, despite their environmental costs.

This fragmentation extends beyond geographic boundaries. Regional disparities in fare structures and ticketing formats adds another layer of complexity. A commuter accustomed to Oyster's easy of tap-and-pay in London and the surrounding areas might be baffled by paper tickets and complicated zoning systems (or lack of) in other parts of the country. This inconsistency breeds confusion, frustration, and potential barriers for those exploring new regions or seeking intercity connections.

Furthermore, the fragmentation hinders data collection and insights into travel patterns. Disparate information silos limit the ability to understand how people move, hindering strategic planning and optimisation of public transport networks. Without a unified system, crafting truly tailored solutions for diverse travel needs and encouraging modal shift towards sustainable options remains a significant challenge.

The current patchwork of public transport and active transport payment systems in Great Britain acts as a significant deterrent to seamless travel, hinders sustainable mobility choices, and limits our understanding of travel patterns. Addressing this fragmentation through an integrated solution presents a crucial opportunity to revolutionise public transport accessibility, enhance user experience, and contribute to a greener, more connected nation.

The idea of an integrated tap-and-pay system

The frustration of navigating a fragmented ticketing landscape has birthed a compelling vision: an integrated tap-and-pay system for public and active transport across Great Britain. Imagine a single card, a magic key that unlocks seamless journeys across station platforms, bus doors, tram stops and e-scooter docks.

This concept, already implemented entirely by cities like London with its Oyster card, and even entire countries like the Netherlands with its OV-Chipkaart, holds the potential to transform the way we move around here in Great Britain.

Such a system would eliminate the need for juggling multiple tickets (some of which are single use), navigating confusing fare structures, and fumbling with various payment methods. A simple tap against a reader would grant access, registering trip details and charging fares automatically, including considerations of special fares (such as Railcards) and promotions. This newfound ease and convenience would entice more people to embrace public and active transport, reducing reliance on private cars and their associated emissions.

Beyond user experience, an integrated system promises a wealth of benefits. Data collected from every tap would provide invaluable insights into travel patterns, enabling informed planning and optimisation of transport networks. This data could also inform the development of personalised fare structures and targeted promotions, further encouraging modal shift and boosting ridership.

While challenges remain in harmonising fare structures, overcoming technological hurdles, and ensuring equitable access across regions and demographics, the potential rewards are immense. An integrated tap-and-pay system represents a bold leap towards a more sustainable, accessible and user-friendly public and active transport landscape for Great Britain.



Analysis aims and potential benefits

This analysis explores the feasibility and potential benefits of implementing an integrated tap-and-pay system for public and active transport across England, Wales and Scotland. Driven by the current fragmentation and its drawbacks, we seek to answer a critical question: can a seamlessly connected network enhance user experience, boost ridership, and ultimately propel Britain towards a more sustainable and equitable transport future?

Our analysis aims to delve into several key areas:

Assess the potential impact of such a system on user experience, sustainability, and wider economic development.

Consider existing integrated ticketing models such as OV-Chipkaart in the Netherlands and Oyster in London, identifying best practices.

Develop a framework for implementing a national system, including the extension of the existing Oyster system, creating a National Fares System, and an overarching National Fares Regulator to govern them all.

Quantify the potential benefits of the system in terms of increased ridership, reduced congestion, improved air quality and sustainability, and economic growth.

The potential benefits of a national tap-and-pay system extend far beyond convenience for passengers. We envision a future where:

A single card unlocks seamless journeys across modes and regions.

Tap-and-go ease of payment creates a more enjoyable and efficient travel experience.

A frictionless system encourages people to switch from private cars to public and active transport.

A unified data platform provides valuable insights into travel patterns.

By analysing the potential of a national tap-and-pay system, this analysis aims to contribute to a more sustainable, accessible, and efficient future for public and active transport in Great Britain.

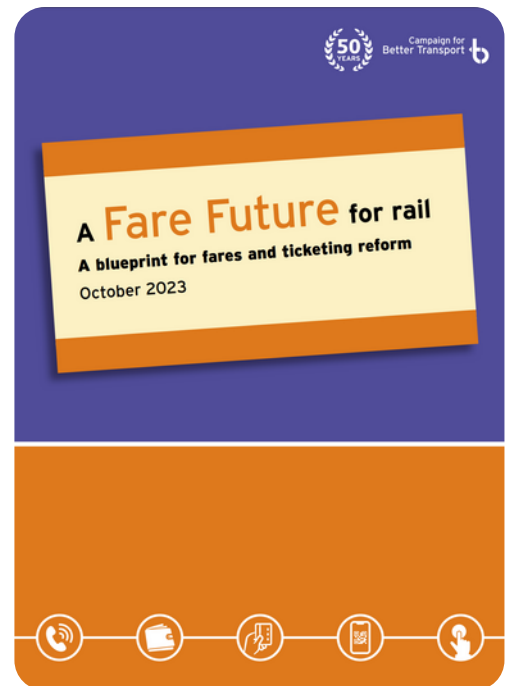
A fare future for rail: Campaign for Better Transport's research

The 'A fare future for rail' research completed by Campaign for Better Transport (Campaign for Better Transport, 2023) highlights the inadequacies of the current railway fares and ticketing system, emphasising its complexity and lack of suitability. It stresses the need for a rational, easy-to-understand, and easy-to-use system that can drive more business onto the railway more quickly and more cheaply.

The report proposes the implementation of new contactless and smartcard-style travel infrastructure, similar to the Oyster system in London, as a solution to the current issues. This would involve the introduction of multimodal smart cards and contactless pay-as-you-go ticketing with capped pricing across Britain, as well as account-based ticketing, which would allow passengers to pay for all journeys across modes within the account using their mobile phone and/or a linked contactless card.

Additionally, the report recommends the expansion of integrated ticketing systems to cover every city region, with the Department for Transport providing funding for capital investment and back-office infrastructure to support this expansion. The aim is to simplify journeys, provide good value for passengers, and encourage more people to use public transport.

You will notice that we have made similar proposals to the Campaign for Better Transport, but we have taken the perspective of a nationwide ticketing system rather than many different cards, schemes and brands to cover mainly city regions.



○ Case Studies



OV-Chipkaart, The Netherlands

Launched in Rotterdam in 2005 and nationally in 2009, the Netherlands' OV-Chipkaart stands as a pioneer in integrated public transport ticketing systems (Wikipedia, 2024). Replacing a patchwork of paper tickets and regional passes, it revolutionised mobility across the country, offering a seamless and efficient way to travel on trains, buses, trams, metros, and e-bikes/e-scooters.

History

In the early stages, OV-Chipkaart was implemented on the Rotterdam Metro in 2005, with the Amsterdam Metro following suit by 2006, accepting the card as an alternative mode of payment. All trams and buses in the city accepted OV-Chipkaart from mid-2007 onwards, and Amsterdam followed suit in late-2008. In mid-2010, OV-Chipkaart became the only valid fare system in the two cities.

Eventually, paper tickets and the former strippenkaart system ('strip card') was entirely replaced by OV-Chipkaart in 2011 (Dutch News, 2011). In 2009, principal rail operator Nederlandse Spoorwegen (NS) adopted the scheme for rail journeys, and regional operators such as Arriva shortly followed suit. In 2014, all rail operators in the Netherlands entirely abandoned traditional paper tickets. Single and return tickets are available and ticket machines and offices for rail journeys but are loaded on a disposable (paper) OV-Chipkaart, and require a supplement of €1 per ticket (Dutch News, 2014).

Since 2014, at the same time as rail operators scrapped general paper ticketing, the OV-Chipkaart ecosystem has become the only ticketing system on public transport in the Netherlands.

How it works

Passengers purchase a personalised or anonymous OV-Chipkaart, loaded with travel credit. Before and after each journey, passengers tap their card against yellow card readers at station platforms, or on-board vehicles (NS, 2024).

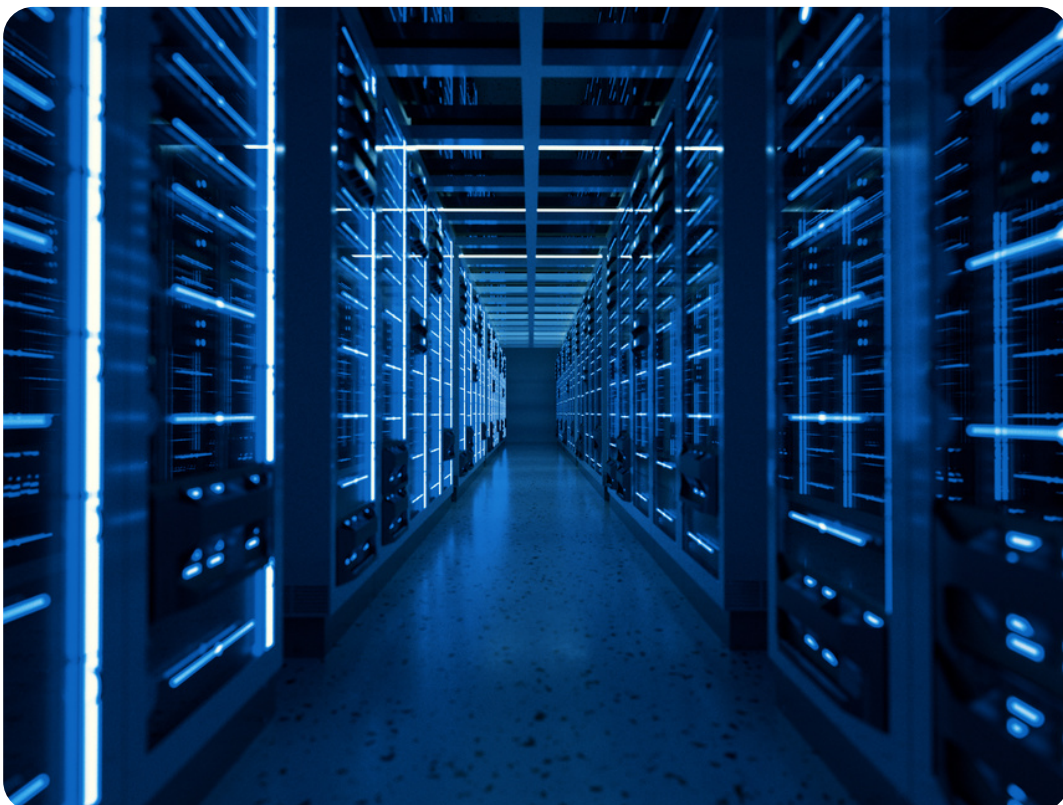
The system automatically calculates the fare based on the distance travelled or previously chosen travel product (rail season ticket, return ticket, daily pass etc.) Travel costs are deducted from the card's balance, which can be topped up online, at kiosks, or with automatic reloading options.

Concerns

During the OV-Chipkaart implementation process, privacy was a major concern, since it allows for collection of travel data and connection of this to personal data of passengers. This would create an opportunity for public transport operators and the operator of the card to track passengers and potentially build an image of personal travel behaviour (Wikipedia, 2024).

According to an investigation which took place in 2007 by the Dutch Data Protection Authority (Dutch Data Protection Authority, 2012), GVB, Amsterdam's transport operator, violated privacy legislation by storing travel and personal data together. In 2012, the Dutch Data Protection Authority also found that principal rail operator NS violated privacy legislation by using personal data for marketing purposes, since those travelling on their anonymous OV-Chipkaart on NS trains were required to activate their card on the NS website.

In addition to these concerns, there was concerns when it came to passengers travelling on pre-loaded credit checking out at the end of the journey, in order for the deposit deducted on check-in to be reimbursed to their card, and this was making transport operators nearly €23 million a year, including half of which would go to NS as the principal rail operator. However, it is now possible to claim back the maximum fare where it is not possible to 'check-out', similar to the Oyster card scheme in London, on the OV-Chipkaart website.



Oyster, London

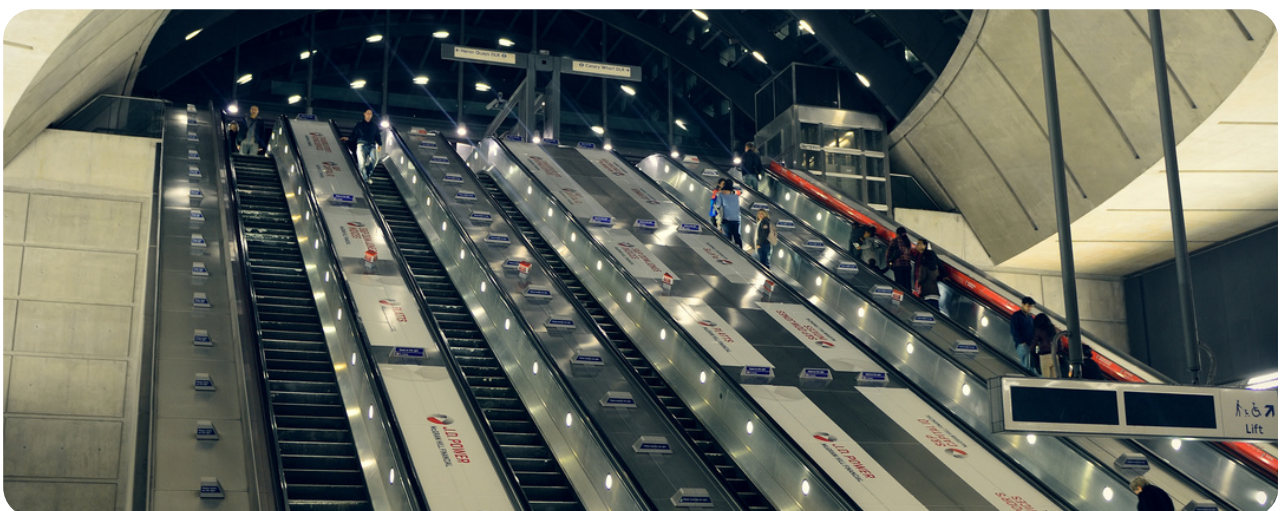
London's Oyster card, launched in 2002 by Transport for London (TfL), quickly became synonymous with efficient public transport in the city. Replacing paper tickets and cumbersome cash payments, it transformed the way Londoners journey throughout the city (Wikipedia, 2024).

History

The Oyster card has been a very phased roll-out, with milestones including the 2002 launch, when London Underground ticket barriers, bus ticket machines, DLR stations and Tramlink stops were fitted with validators, and TfL/bus operator staff were issued with cards. In 2003, these cards were issued to the public for annual and monthly tickets. Pay as you go, or PAYG, launched on the Underground and DLR in 2004.

Later in 2004, annual and monthly season tickets became only available on Oyster, and the famous daily price capping (Transport for London, 2024) was introduced in 2005, capping fares on Oyster on a daily and weekly basis dependant on the zones you have travelled through. Also in 2005, weekly tickets were also made Oyster-exclusive. PAYG was extended to Overground in 2007 and National Rail in 2010. In 2014, contactless cards could be used instead of Oyster on the Underground, DLR, Overground and National Rail, with Apple Pay, Google Pay and Samsung Pay accepted later in the year.

An Oyster app was introduced in 2007, allowing the viewing of transactions, disputing of maximum fares, and top-up of PAYG/purchase of products. A 'Hopper Fare' for buses was introduced at the start of 2018, with the ability to make unlimited journeys within one hour for the same fare.



Concerns

Similar to OV-Chipkaart, there were concerns surrounding privacy. Each Oyster card is numbered uniquely, and registration is required for tickets lasting a month or longer, which are no longer available in paper form. For up to eight weeks, TfL holds journey and transaction data centrally. Full registration details are held centrally and not on individual Oyster cards, and recent usage can be checked by anyone in possession of the card at some ticket machines.

In the past, the Metropolitan Police have used Oyster card data as an investigative tool. In 2008, news reports indicated that the security services were seeking access to all Oyster card data related to counter-terrorism activities, but such access has not been provided by TfL (The Guardian, 2008).

There have been similar concerns to the Netherlands when it comes to forgetting to 'touch-out', resulting in being charged a maximum fare either on their contactless card or Oyster card at the end of the day. In fact, some users have reported receiving penalty fares by revenue inspectors where they couldn't find where to touch-in, in some cases.



Lessons learnt from these schemes

The fractured state of smart ticketing in Great Britain leaves something to be desired. A dizzying array of schemes, each operating in its own silo, leaves passengers and operators alike stranded in a sea of confusion. From the Oyster card's familiar tap-and-pay inside the M25, to the season-ticket-powered ITSO.

To provide some examples, in Great Britain, all train operating companies have a separately branded 'Smartcard', which allows for season tickets, and sometimes other ticket types such as day returns, to be loaded onto a contactless card, allowing for seamless travel by tapping on train manager devices or ticket gates at stations.

However, in addition, operators and local/regional governments are also introducing their own smartcards with differing restrictions and validity, such as the Swift and Swift Go smartcards in the West Midlands, Pop in the Newcastle city region, MetroCard in Merseyside, and Mango in the East Midlands.

The future could involve seamless travel across the nation; a single tap, unlocking any door, any bus, any train. One card, one system, one set of rules. No more fumbling with incompatible technologies. A singular platform, embraced by all transport operators and local authorities, empowers passengers and unlocks the true potential of the transport network.

However, flexibility is key. Local authorities and operators would need to retain the power to fine-tune the system to their specific needs. But for the foundation framework must be unified and unwavering to ensure confidence in the new system.



○ Our concept



Reviewing our fragmented existing schemes nationally

The fractured state of smart ticketing in Great Britain leaves something to be desired. A dizzying array of schemes, each operating in its own silo, leaves passengers and operators alike stranded in a sea of confusion. From the Oyster card's familiar tap-and-pay inside the M25, to the season-ticket-powered ITSO.

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Expanding the most well-known identity: Oyster

Building a well-known brand is vital for the development of a scheme that is well-used and trusted. The Oyster card scheme in London is already well-known and the brand is trusted. Its contactless scheme, allowing payment by debit and credit card, is also already under expansion further outside of London, as far out as Aylesbury, Bletchley, Guildford, and Tunbridge Wells.

Therefore, while keeping the same rules in place in London as previously, we would propose that the Oyster brand and Oyster card validity is extended across Great Britain in a phased approach. It's clear it won't just be the case of clicking fingers to enable Oyster smoothly across all modes and areas in Great Britain, and that there would need to be phasing across regions as work takes place with operators and local/regional government.



A new governing body: The National Fares Regulator

Since Oyster would become nationwide, it wouldn't be right for Transport for London to continue operating the Oyster scheme. Therefore, Oyster controls outside of London would be taken away from TfL and put into the hands of a new central government Regulator; the National Fares Regulator, reporting into the Department for Transport (DfT).

The Regulator would be responsible for managing the Oyster brand, interface, infrastructure, and card, as well as reviewing and managing the National Fares System (NFS) upon introduction. A Shadow Regulator would come into place prior to the Regulator itself in order to plan and implement Oyster nationwide, and work with Transport for London, government at all levels and transport operators to ensure a smooth transition. However, the NFS would be developed in parallel, through the Shadow Regulator and the Regulator itself.

Transport for London would retain the right to manage their fare system within London separately to the National Fares System in collaboration with the Regulator.



Building a seamless payment system

Technology infrastructure

It's clear that, to really make this programme a reality, there needs to be a mass introduction of new transport ticketing infrastructure, primarily either modifying existing infrastructure to support the Oyster network, including programming of yellow readers to allow Oyster, and expansion of Oyster ticket machines to the rest of the country, and erecting new physical infrastructure, primarily yellow readers and ticket machines.

We would also need to recognise that information is key, introducing posters and signage across Great Britain, explaining that Oyster is being expanded nationally, and what it means in that specific local area. At the start, we need to accept that launch would be gradual, and infrastructure would be introduced on an operator-by-operator and area-by-area basis. Fares would need to be set by operators and local/regional government at the beginning, with a vision to simplify this longer-term.

Oyster cards

The roll-out of actual Oyster cards nationwide would again be a gradual process, supported by local and regional government and transport operators. Products such as season tickets and local bus passes/rangers/rovers would need to be able to be purchased on the New Oyster app (more about this later), as well as retaining all London ticketing options.

Overall, Oyster cards themselves would be a later addition into the national Oyster network, considering that they would need to effectively be 'programmed' by local authorities to charge the correct amount, with justification, allowing as much transparency to the customer as possible.

The expectation long-term would be those contactless options, assuming promotions and benefits are available while using these methods, would be more popular and convenient as opposed to Oyster cards with purely pay-as-you-go top-up.

Contactless payments with debit or credit cards

What is likely to happen first across Great Britain is the introduction of contactless payment via debit or credit card either with a physical card or using Apple Pay, Google Pay and Samsung Pay. A view would be taken that this would allow the eventual replacement of paper ticketing on buses, trains and trams, alongside Oyster cards for those that may require them.

Contactless payments with Oyster from mobile devices

Like other tap-and-pay card offerings across the world, especially in the United States such as San Francisco, where you can add their 'Clipper' card directly to Apple Wallet (Apple, 2024), the Oyster card itself would be available as its own card on Apple Pay, Google Pay and Samsung Pay, to be used similarly to any other debit or credit card in the sense that you would be able to tap-in and tap-out with it on yellow readers.

The 'New Oyster' app

The Oyster app would be redesigned and re-built under the New Oyster scheme, considering its new scope as a national ticketing scheme. The same features, such as purchase of PAYG credit and other season products would be available, as well as viewing historic transactions and charges on Oyster and contactless cards. Several improvements would be introduced:

- Updating cards via NFC: Instead of needing to tap-in to update a card, the New Oyster app would follow suit with train operating companies, allowing cards to be updated with new product or balance via NFC on supported mobile devices
- Rail ticket loading: Prior to a new national fares system being introduced, we'd support the ability, similar to ITSO cards, for national rail tickets pre-paid and purchased online and in-app to be loaded onto Oyster cards. This would be rolled out on an operator-by-operator basis.

However, the scope of the Oyster app needs to be recognised – as a fare management app, nothing more. Other apps exist to journey plan. Whether they need to be revamped is another story. To introduce a brand-new travel planning system when there are existing platforms out there such as Citymapper and Google Maps is an additional cost to something that is likely to already have a high capital cost to roll out.



Promotions, discounts and staff travel

Dependant on personal travel habits and information, we'd suggest introducing promotions based on the back of the Oyster infrastructure system that contactless cards and Oyster cards understand, such as free public transport travel on your birthday month, similar to a new scheme introduced by TravelWEST (TravelWest, 2024), to encourage modal shift from private car to sustainable forms of transport.

In addition, instead of having to get a Railcard discount, for example, validated by a ticket office or ticket machine, you would be able to do this in-app via a secure connection to the Railcard app. Similarly, dependant on your age, you would be automatically suggested to connected valid ID to enable student/younger persons discounts on Oyster card and contactless card transactions dependant on mode and operator you are travelling on.

If you are entitled to free bus travel, this would also be able to be connected to Oyster cards.

If you are a member of staff on transport operators or at local/regional governments, this would be acknowledged, and a new Oyster for Transport Staff portal would be introduced with the ability to enable cross-modal free travel dependant on those allowed by your employer after you have used a registration link.

This feature would only be available on Oyster cards, and you would be able to see your free travel entitlement (such as area it works across and operators it works on) in the New Oyster app.



Aligning fares

It won't happen instantly: Empowering local authorities and regions

We need to accept that fares across Great Britain would take time to be regulated and put into a system that makes sense. Fares are currently very complex. At the time of writing, most bus fares (around 90%) are capped to £2. Our proposal is this fare is lowered to £1.75 and covers every single bus and tram route in England, Wales and Scotland, and a 1 hour 'all routes' cap is implemented. This would mean the rest of Great Britain aligns with London.

Fares are notoriously complicated on National Rail services, and these are going to be the most complex to completely rethink. Therefore, fares would be reconsidered operator-by-operator or in partnership with the Shadow National Fares Regulator and Great British Railways, during which time, tapping in and tapping out at stations would trigger the cheapest possible flexible ticket dependant on applied discounts (such as child rate) to be purchased. London would not be affected.

On metros (specifically the Tyne & Wear Metro and Glasgow Subway), on a case-by-case basis due to the limited number of metro systems in Great Britain, the operator would set fares in partnership with the regulator. London would not be affected.

On the New Oyster app or on the Oyster website, passengers would be able to view their journey history and identify what methodology (including a link) was used to calculate the best fare for their journey and dispute it if they believe it is inaccurate or they could have got it cheaper elsewhere.

Longer-term: The National Fares System (NFS)

During the rollout of Oyster nationwide, the National Fares System, or NFS, would be developed, to fundamentally rethink the way people pay for public and active transport services in Great Britain, in a post-COVID environment where people are less likely to travel during peak periods overall.

NFS won't cover Greater London, where TfL would maintain their fare logic. London has spent over 20 years crafting its fare system based upon Oyster, and it would only be fair for this system to remain, as it is serving London well and there is unlikely to be an economic case to make such a radical change in a city which has such a different transport geography to every other in Great Britain.

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At the beginning, the National Fares System, which would be a full database of all fares (excluding bus and tram travel, of which every fare would be £1.75) across Great Britain between every single stop, would be a separate development to making Oyster nationwide, only to be adopted by the Oyster contactless scheme once development is fully completed. Yellow readers would then be reprogrammed using internal tools to charge the appropriate amount to or use the relevant product on Oyster cards or other contactless payment cards.

During the implementation, we recommend that the following measures are considered:

- The introduction of nationwide public and active transport discounts, currently provided through Railcards, by default without requiring an additional charge per issued Railcard. This would be proven based on date of birth and a valid photo ID scanned into the New Oyster app digitally.
- Identifying when it is appropriate for touch-ins to 'expire' and automatically touch somebody out, and what fine or penalty fare is appropriate for the incomplete journey.

It is important that the National Fares System is fully documented publicly, and that, in the New Oyster app, justification can be provided per-transaction as to how the charge was calculated on PAYG top-up or via contactless payment cards.



○ Our analysis





The benefits

Seamless travel throughout Great Britain is what we have imagined here. A single tap unlocking any door, any bus, any train. No more paper tickets clogging wallets, or confusion over the incredible number of regional schemes. And all these benefits don't just impact passengers, but operators, and even society as a whole.

For passengers

- **Empowerment:** Passengers are given the freedom to roam without navigating the maze of separate billing systems. One card, one app, unlocking the entire national network, which can simplify travel and boost confidence in the transport network across the country.
- **Enhanced travel experience:** Effortless journeys with tap-and-go technology. Journey history on a single platform. No more frantic dashes for last-minute tickets or fumbling with incompatible cards and readers.
- **Savings:** A national approach allows for fairer, simpler fares, getting the best price, every time. A nationwide cap on bus travel - £1.75 – and flexible pricing on National Rail, offering the best possible price, every time.
- **Accessibility:** Integrated discounts for students, seniors and people with disabilities, automatically applied through digital verification, removing administrative hurdles and removing the need for dedicated, easily lost cards or apps.

For operators

- **Efficiency:** Streamlined operations with standardised technology and centralised data management. Reduced overhead costs through elimination of paper ticketing and multiple systems.
- **Improved planning:** Accurate passenger travel habit data informs better infrastructure funding allocation and service scheduling, fostering efficient resource utilisation.
- **Enhanced satisfaction:** Smoother journeys lead to happier passengers, boosting loyalty and ridership. Real-time feedback through Oyster allows for quick issue resolution and service improvements.
- **Reduction of dwell times on bus services:** On bus services where it is required to purchase a paper ticket, dwell times can be significantly reduced by allowing users to tap on, including at any door, not requiring engagement with the driver at all.

For society

- Economic growth: Efficient public transport promotes business activity and tourism, encouraging investment and job creation (including by the development of Oyster). Reduced congestion eases the strain on urban landscapes, improving air quality and public health.
- Environmental sustainability: A shift towards public transport lowers carbon emissions, contributing to climate change mitigation efforts. In addition to this, reduction in the requirement of paper tickets on rail, bus and metro would reduce wasted single-use paper (and where paper tickets are required, a supplement could be introduced similar to the OV-Chipkaart)
- Social inclusion: Seamless, affordable travel connects communities, empowers individuals and fosters a more equitable society.



Implementation considerations

Compatibility and interoperability across the network

- **Technical differences:** Existing infrastructure across Great Britain varies widely, from the robust Oyster network in London to legacy systems and supporting infrastructure in rural areas. Ensuring seamless compatibility with different infrastructure networks would require major infrastructure replacement and standardisation.
- **Regional variations:** When Oyster is fully launched nationwide, fare structures would still differ across regions and cities, both rural and urban. The new back-end system must be flexible enough to accommodate these variations while maintaining overarching unity, while the National Fares System is developed, and even somewhat after it is introduced.

Harmonising the fares structure

- **Balancing simplicity and equity:** Creating a universal fare structure through the National Fares System presents a delicate balancing act. Simplicity encourages adoption, but regional adjustments may be necessary to ensure equity and avoid price hikes in certain areas, for example.
- **Transitional challenges:** Moving from existing, complex fare systems to a unified fare structure would require careful planning and communication to minimise disruption and resulting passenger dissatisfaction.

Funding sources

- **Significant upfront investment:** Implementing a nationwide system necessitates substantial capital expenditure for infrastructure introduction and upgrades, system development, and operator subsidy and compensation. Identifying robust and sustainable funding sources is crucial.
- **Balancing national and local costs:** Funding allocation needs to strike a balance between national investment and contributions from local authorities and transport operators, who, at the end of the day, would both benefit.

Communication and awareness

- Public awareness and adoption: Rolling out a nationwide system demands effective communication strategies to educate the public about its benefits and operational specifics. Building trust and encouraging adoption is essential for this kind of rollout.
- Staff training and support: Transport operators and customer service personnel need comprehensive training to understand the new system and effectively assist passengers, including amended revenue protection activities in line with the new payment methods through contactless and the Oyster cards.

Addressing these challenges

- Collaborative governance: A centralised regulatory body, the National Fares Regulator, should collaborate with local authorities, operators and technology providers to ensure coordinated implementation and system oversight throughout the whole phased introduction process.
- Phased rollout: A strategic, phased rollout allows for initial testing and refinement in smaller regions before scaling up nationwide, minimising disruption and ensuring smooth adaptation.
- Data-driven decision making: Leveraging data from existing systems and pilot projects of Oyster nationwide can inform fare structure optimisation, identify potential compatibility issues, and target communication campaigns to issues regularly faced by users.
- Continuous improvement: The system's design and operation must be adaptable to evolving needs and technological advancements. Feedback mechanisms and ongoing monitoring are essential.

By meticulously addressing these challenges and fostering collaborative implementation, we can navigate the path towards a unified national smart ticketing system. Remember, reaching this point requires not just technological prowess, but also careful consideration of human factors, financial realities, and the need for inclusive and equitable change. By navigating these challenges with foresight and collaboration, we can build a truly transformative system that unlocks the full potential of the sustainable transport network in Great Britain.





Our key recommendations

Based upon our analysis, here are some key recommendations for implementing a national tap-and-pay system for public and active transport across Great Britain.

Phased approach

- Start with major urban areas: Begin by implementing the system in major cities and towns with existing significant public transport infrastructure and micromobility schemes. This allows for easier testing and refinement before scaling up to rural areas
- Expand gradually: Take a phased approach, rolling out the system to regions and transport operators/modes one at a time. This allows for smoother integration and minimises disruption.
- Leverage existing infrastructure: Build upon existing systems like Oyster, adapting them to fit the national framework. This reduces infrastructure costs and accelerates implementation.

Technological considerations

- Standardise hardware and software: Establish national standards for ticketing equipment and software to ensure compatibility across different regions and operators.
- Invest in contactless infrastructure: Upgrade existing infrastructure to support contactless payments with cards, phones and other devices.
- Develop a robust data management system: Create a central data platform to collect and analyse travel data, giving access to operators and all levels of government, enabling informed decision-making and system optimisation.

Fare harmonisation

- Develop a flexible fare structure: Create a national fare structure with regional adjustments to account for local costs and needs. This ensures both simplicity and equity.
- Implement dynamic pricing: Consider using dynamic pricing models to optimise fares based on real-time travel demand and encourage off-peak usage.
- Introduce integrated discounts: Integrate existing discounts for students, seniors and people with disabilities into the system, facilitating automatic application and reducing administrative burdens.

Governance and funding

- Establish a dedicated national regulator: Create an independent regulator responsible for overseeing the system, setting standards and managing fares.
- Secure sustainable funding: Identify a mix of funding sources, including government grants, public-private partnerships, and revenue from ticket sales to ensure long-term financial stability.
- Promote collaboration: Foster collaboration between national and local governments, transport operators and technology providers to ensure coordinated implementation and efficient resource allocation.

Public awareness and engagement

- Launch comprehensive communication campaigns: Inform the public about the benefits and features of the new system through various channels, including traditional media, digital platforms, and community outreach programmes.
- Provide clear and accessible information: Offer user-friendly guides, tutorials and support resources to help passengers understand and navigate the new system.
- Address privacy concerns: Implement transparent data privacy practices and build trust with users by guaranteeing data security.

Continuous improvement

- Monitor and evaluate system performance: Regularly collect and analyse data to assess system effectiveness and identify areas for improvement.
- Seek user feedback: Actively gather feedback from passengers and stakeholders to understand their experiences and address any concerns or issues.
- Embrace innovation: Stay updated on emerging technologies and best practice in the smart ticketing field, and adapt the system as needed to remain efficient and user-friendly.



Our final take and conclusion

The potential for a national tap-and-pay system for public and active transport across Great Britain is vast. It promises a future of seamless travel experiences, empowered riders, and a more vibrant and connected nation. While challenges remain, from technological integrations to fare harmonisation, the benefits offered by a unified system are undeniable.

Our final take is clear: the time for a national tap-and-pay system is now. The fragmented landscape of current ticketing systems hinders passenger convenience, discourages intermodal travel, and stifles innovation. Embracing a national approach paves the way for a future where riders glide effortlessly between buses, trains, trams, micromobility and more, empowered by a single tap.

Based on our analysis, implementing a system of this magnitude requires unwavering commitment from stakeholders at all levels – government, transport operators, technology providers, and most importantly, the people. Robust governance structures, transparent communication, and continuous improvement are essential cornerstones for success.

Ultimately, the decision to launch a national tap-and-pay system lies not with us, but with the collective vision of a nation. We believe the evidence presented in this report paints a compelling picture: a future where seamless travel fuels economic growth, enhances social mobility, and fosters a healthier, more sustainable society. This future is within reach, waiting to be unlocked by a single tap.





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Bibliography

Apple Support (2024): Add a travel card to Apple Wallet.
<https://support.apple.com/en-gb/105079>

Apple Support (2024): Where you can travel on public transport using Apple Pay. <https://support.apple.com/en-gb/HT207958>

Campaign for Better Transport (2023): A Fare future for rail: A blueprint for fares and ticketing reform.
<https://bettertransport.org.uk/wp-content/uploads/2023/11/2310-fare-future-report.pdf>

Dutch Data Protection Authority (2007) [Archived]: 2007 Summarised.
https://web.archive.org/web/20120625100344/http://www.dutchdpa.nl/downloads_jv/jv2007_sv.pdf

Dutch News (2011): Strippenkaart disappears from all buses, trams and metros.
http://www.dutchnews.nl/news/archives/2011/11/strippenkaart_disappears_from.php

Dutch News (2014): Paper train tickets vanish.
http://www.dutchnews.nl/news/archives/2014/07/paper_train_tickets_vanish.php

Nederlandse Spoorwegen [NS] (2024): Travel Information: Traveling with the OV-chipkaart.
<https://www.ns.nl/en/travel-information/traveling-with-the-ov-chipkaart>

The Guardian (2008): MI5 seeks powers to trawl records in new terror hunt.
<https://www.theguardian.com/uk/2008/mar/16/uksecurity.terrorism>

Transport for London (2024): Bus and tram fares. <https://tfl.gov.uk/fares/find-fares/bus-and-tram-fares>

TravelWEST (2024): Free bus travel throughout your birthday month.
<https://travelwest.info/tickets-travelcards/free-bus-travel-on-your-birthday-month/>

Wikipedia: Oyster Card. https://en.wikipedia.org/wiki/Oyster_card

Wikipedia: OV-Chipkaart. <https://en.wikipedia.org/wiki/OV-chipkaart>