Ticketing & Revenue Update

Issue #100 – MAY 2017

Are you reading this edition on a desktop or tablet computer? – You may be interested to know that each page number and heading on this page has a link that takes you directly to the relevant articles inside this document.

THE KEY STORIES INSIDE

Page 2 — MAY FARES REVISION

We take a quick overview of some of the changes being implemented as part of the Fares Revision on Sunday 21 May.

Page 4-5 — MORE CONTACTLESS OPTIONS

We look at two forthcoming developments which will offer our customers new and novel ways of using contactless technology to pay for their travel.

Page 6 — FULL SPEED AHEAD FOR FUL

We update you on the current trial and plans for the launch of Faster Universal Load and a new ticketing app for customers later this year.

Pages 20 — TOM / SAF MAKEOVER

We provide an early overview of plans to upgrade the TOM and SAF as part of a forthcoming programme of upgrading our equipment.

Page 21 — STATION COMPUTERS & SCUs

It isn't just the TOM / SAF that faces a makeover, as we unveil plans to replace other key items of equipment which support our station operations.

And that's only some of the items included inside this month's TRU…..

UNDERGROUND

HAPPY 100 TRU

Welcome to the 100th edition of what is now known as the Ticketing & Revenue Update. It has taken us 12 years to reach this milestone, since the first edition was published in May 2005, initially under the banner of "What's happening?"

The first edition aimed to highlight changes that were planned for the forthcoming fares revision, which that year was scheduled to take place in June, rather than May and totalled 3 pages with no images or illustrations. Things have come a long way in the following 99 editions and for this May's Fares Revision we have a bumper 24 page edition.

Apart from bringing you up to date with the latest news, this edition marks a double celebration of 100 editions of TRU with a two page *Special Feature* on Pages 12 & 13, documenting some of the milestones covered by TRU since its inception.

Our second celebratory *Special Feature* on Pages 10 & 11 is a further two page feature looking back on the 30th Anniversary of the introduction of the UTS Project and some of the major changes this introduced to the face of ticketing on the Underground.

Finally in a strange stroke of irony, in edition two of TRU, one of the main stories, including the first photograph to be included in the publication, featured the installation of the first Chip & PIN units on QBMs at 6 stations in July 2005. In this edition on **Page 16** we cover the Vanguard of the new PED which is replacing the Chip & PIN devices on QBMs 12 years later!

Written and compiled by

MAY FARES REVISION

MAY FARES REVISION PREVIEW

The second fares revision of the year took place on **Sunday 21 May 2017**. As normal for May there were very few changes to LU fares or products, but some through-fares have been revised where elements are set by other operators.

Some of the changes to highlight are:

- Discounted fares for Travelcard holders on River services increased
- Adult through fares to **Heathrow Airport** via Heathrow Express increased
- New NR destinations on the Chiltern service to **Bicester Village** (formerly Bicester Town), **Islip**, **Oxford Parkway** and to the new Greater Anglia station at **Cambridge North**, have been added to POMs to allow customers to buy through tickets to these destinations
- TfL Staff Oyster cards are now accepted by the gates at the following TOC stations which are served by London Overground services: **Clapham Junction**, **Denmark Hill**, **New Cross**, **Peckham Rye**, and **Queens Road Peckham**. Staff Oyster cards are valid at these locations, but users had to present their Staff Oyster card and ID to be allowed in and out by gateline staff.
- A new screen message has been added to all POMs, which will be displayed to any customers buying a new Oyster card. This will highlight to them that they will not be able to obtain a refund on the Oyster card within 2 days.

Two POM changes also enhance the range of tickets available to customers: ➜

1. Customers are now able to buy through tickets to NR destinations at Adult Railcard discount rate from all LU stations
2. Extension fares to NR stations outside of the zonal area are now available at all stations to holders of all Travelcard season tickets. Although these have been available to customers holding a season ticket including Zone1, they have not previously been available to holders of non-Zone 1 Travelcards.
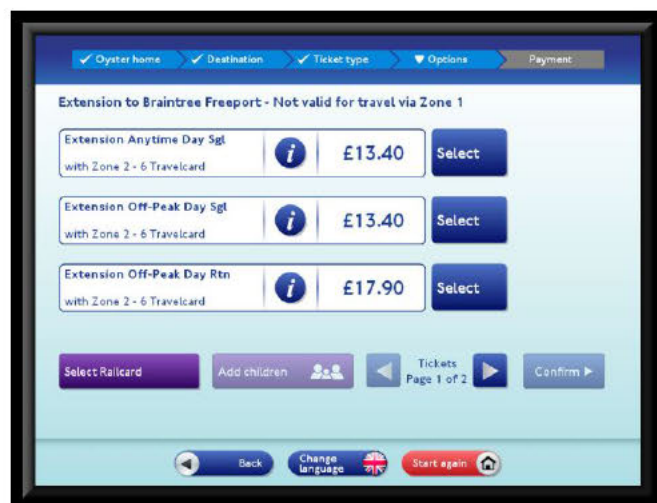
Implementation follows an initial trial at **Buckhurst Hill** at the end of last year and the recent extension to 10 further locations as featured in ▮▮▮▮.

⬅ As a number of through fares have changed, Staff Fares lists have been updated. These are available via the T&R section of the Intranet from **Friday 19 May** using the link below.

http://onelink.tfl.gov.uk/sites/oyster/Fares%20List/SitePages/Home.aspx

As previously reported, some further changes that were originally included within the scope submitted to Cubic for this fares revision, have already been implemented early as part of planned base data changes.

These included the implementation of an additional OSI between **Warren Street** and **Euston Square** which was implemented on **Sunday 26 February** (see TRU98) and a change to the POM screen displayed when a cancelled or disabled card is presented to the card reader ➜.

Previously there had been confusion amongst staff and customers as the screen showed the last card balance and no indication that the card had been cancelled. This screen change was implemented on **Sunday 12 March** and was covered in TRU99.
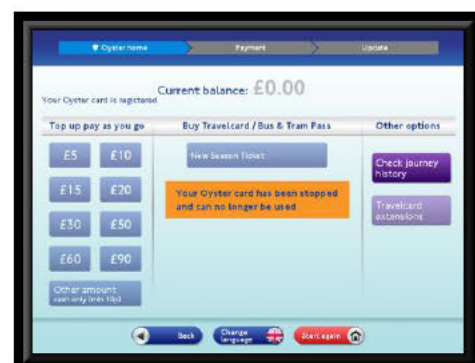
TICKETING & REVENUE BOOKS

A recent audit of T&R Books across the network has highlighted that a large number of stations failed to follow the updating instructions sent out when the packs were issued at the end of January and appear to have disposed of the current copies of a number of the books that were not reprinted for the January Fares Revision.

As a result of this we have taken the decision to bring forward the updating of some of the books and will be issuing a further update pack.

It was planned to update **T&R Books 5, 6 & 7** in conjunction with the May Fares Revision, but due to production and printing issues, the new editions are now not scheduled to be published and distributed to stations until the end of June.

Further information will be provided in the next TRU and future Hot Issues Bulletins.

POLICE OYSTER CHANGES (1)

On **Monday 15 March 2017** a new BTP Staff Oyster Photocard replaced the Contractor Oyster cards that had been previously issued to eligible BTP civilian staff.

The photocard displays the holder's name and photograph and there is no requirement for them to provide their BTP Staff ID when using it. Additionally;
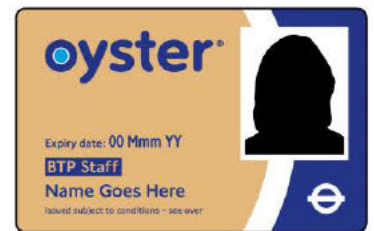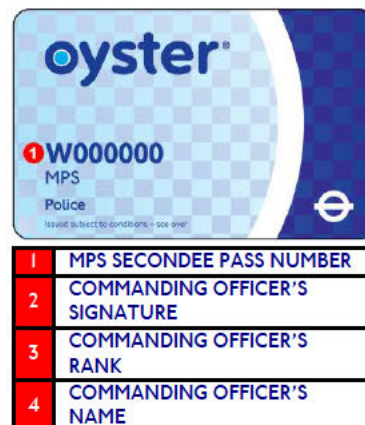
➢ These photocards are valid until **31 March 2021** and the expiry date is displayed on the front of the card.
➢ Holders are entitled to travel to and from work and for work related duties, but the card *must not* be used for leisure travel.
➢ The card is valid for free travel on Tube, bus, tram, DLR, London Overground and TfL Rail services only.
➢ The card is *not valid* on Emirates Air Line, London River Services or on any National Rail service.
➢ When read on a *MOVie* device the BTP Staff Oyster Photocard will show as a *'Staff Pass ATOC nominee'*.
➢ If read on a *Revenue Inspection Device* it will display as *'Staff Pass Contractor'*.

POLICE OYSTER CHANGES (2)

On **Monday 24 April 2017** TfL and the Metropolitan Police Service (MPS) started on a trial basis to provide free travel for Police Officers from other UK forces, who have been seconded to the MPS.

These Police Oyster cards allow unrestricted free travel on Tube, bus, Tram, DLR, London Overground and TfL Rail services.

They are not valid on Cycle Hire, the Emirates Air Line, London River Services or any National Rail service.

1	MPS SECONDEE PASS NUMBER
2	COMMANDING OFFICER'S SIGNATURE
3	COMMANDING OFFICER'S RANK
4	COMMANDING OFFICER'S NAME

The number printed on these Police Oyster cards has a 'W' prefix and must be accompanied with an MPS Secondee Pass showing the same number as displayed on the Police Oyster card.

Part 1 – ...and on the subject of Police travel arrangements

Ticketing & Revenue T & R Trivia

Q1) Which Police Officers can no longer travel free on sole production of their warrant card?

A	Kent / Essex / Surrey	B	Hertfordshire / Thames Valley
C	British Transport Police	D	Metropolitan / City of London

Answers on Page 23

Q2) PCSOs* from which force(s) can travel free to / from work both in and out of uniform?

A	Kent / Essex / Surrey	B	Hertfordshire / Thames Valley
C	British Transport Police	D	Metropolitan / City of London

* PCSO – Police Community Support Officer

IN THE NEWS...

PAYMENT BY BOTTLE?

Had we published this news story in TRU99 (our April edition), many of our regular readers would have dismissed this story as one of our long line of April Fool's Day spoof stories.

On this occasion however, this is actually a genuine item... so read on.

Those in the world of marketing are always looking for new ways to promote their products and the Tube network with a huge captive audience offers great opportunities to market new or existing products. Between **Tuesday 30 May** and **Friday 02 June**, a major promotion of a prominent drinks brand is due to take place at Oxford Circus.

As part of the promotion 5,000 free samples will be distributed. Each of these bottles will include a Near Field Communication (NFC) chip stuck to the base.

NFC is the technology used for contactless payments and in this case the chip will be enabled to allow one free journey on LU. 1,250 free samples will be distributed during two periods on each day of the promotion (11:00 -12:00 and 15:00 – 16:00 hours).

This free journey will need to be made before close of traffic on **Sunday 04 June**, as indicated on the promotional bottle and customers will need to touch in and out on the card readers with their bottle. The chip will be added to the contactless payment "Denied List" as soon as the chip is used to touch in, or at the end of the promotional period, if it has not already been unused.

Some other important points;

- ❖ *Not available for travel on NR services or any other modes*
- ❖ *The chip is valid for* *one journey on LU only*
- ❖ *If the chip cannot be read, then it is* *not valid for travel* *and payment must be made using another method*
- ❖ *Customers must use the chip to touch-in / touch-out and on no account must they be let in or out through the gates without validating*
- ❖ *The bottles are not valid for travel after Sunday 04 June 2017*
- ❖ *Revenue Inspection Devices (RIDs) used by Revenue Control staff will determine if the chip is valid for travel and will record an inspection tap. If rejected due to the chip being on the denied list, the customer would be liable to a penalty fare*
- ❖ *Any customer queries should be directed to Lucozade's Customer Helpline on 0800 096 3666.*

Terms and conditions of this promotional offer will be printed on a special collar around the neck of the bottle.

Bottle top ↑

Bottle base ←

↓ Bottle neck collar

TSGV	Trauma Support Group Volunteer
TSED	Timetable Set Identity
TSID	Ticketing Systems Identification card
TSITC	Train safety Irregularity Test Certificate
?M	Train Services Manager

JARGON BUSTER

- *Do you know your TSID from your CSID?*
- *Do you have any idea what TIF stands for?*

If not, help is at hand in the form of the LU Jargon Buster which provides staff with a breakdown of the terms, abbreviations and acronyms used across London Underground. This is particularly useful to staff in the world of T&R, a place which is littered with acronyms to describe almost every device, room and activity.

The Jargon Buster has recently been updated to include new terms such as **CHD** (Cash Handling Device) and some missing ones such as **PED** (PIN Entry Device) and **RID** (Revenue Inspection Device). We've also had the term **UTS** (Underground Ticketing System) removed, a widely used acronym - that hasn't existed for almost 20 years!

IN THE PRESS

As part of our *In the News* section, from time to time we carry coverage of ticketing related articles making the headlines in the press.

On Tuesday 25 April the *Evening Standard* published an article on the amount of money currently held by TfL on Oyster cards that have not been used for more than a year. The headline of this article highlighted the figure as having recently risen to £250.87 million, or a quarter of a billion pounds.

On the face of it, this is an enormous amount of money, but within the detail of the article was some further information, indicating that this was made up of 45.55 million Oyster cards which had not been used for a period of 12 months or longer.

They also reported that the unused card balance was currently increasing at a rate of around £1million per month.

On this basis the average amount per card is £5.50, which when considering that nearly all of these cards have a £5 deposit on them, means that the average PAYG balance per card is actually quite low. The figure just becomes very large with the huge volume of cards involved.

One needs to take into account that these cards include;

❖ *many additional cards held by regular customers, for use by their family or friends when they are visiting London*
❖ *cards retained by visitors for use on a future visit to London*
❖ *many cards which will have been lost or destroyed, or that have been placed on the hotlist but never disabled or cancelled.*

The article concluded with a link to a call from London Travel Watch for TfL to remove the current 48 hour restriction on refunds on new Oyster cards. This is something that is currently being examined, but needs to be implemented in a way that does not re-open the flood gates to the various Oyster and bankcard frauds we have reported upon in previous editions of TRU.

ANOTHER WAY TO PAY

Samsung pay launched in the UK on *Tuesday 16 May* and is accepted for PAYG travel on London Underground, just like other mobile payment apps and contactless cards.

It is expected that Samsung Pay will be available for a number of Android devices, but customers with a supported Samsung phone can download Samsung pay from the Galaxy Apps store, then add their credit or debit card details.

Using Samsung Pay on LU will be the same as using a contactless card for PAYG:

❖ *Customers must touch in and out to pay the right fare*
❖ *They will need to touch the middle of their phone (where the antenna is) flat on an RTD*
❖ *If a customer uses both Samsung pay and their contactless card on the same journey, they will be charged as separate payment devices (even if it's the same card they've added to Samsung pay), they:*
  ➢ *could be charged maximum fares for two incomplete journeys*
  ➢ *may not benefit from daily and Monday - Sunday capping*
❖ *Customers must have enough battery life on their phone to complete their journey. If the battery runs out during a journey and:*
  ➢ *they're unable to touch out at the end, they'll be charged a maximum fare*
  ➢ *an inspector asks them to touch the phone on their reader, it won't be read and they could be liable for a penalty fare*

Customers asking about this scheme should be advised to contact their card issuer if they're unsure whether their bank card is eligible.

IN THE NEWS...

FASTER UNIVERSAL LOAD APPROACHES

In TRU97 we outlined details of the next phase of the Future Ticketing Project (known as FTP4). The project aims to deliver two significant changes to our current ticketing arrangements.

The first of these is Faster Universal Load (FUL), which as we have previously outlined, will enable customers to order a product or PAYG top-up and then be able to collect it from any station about 20 /30 minutes later.

The functionality will also be used to speed the transmission and boost the collection rates for refunds to customers Oyster cards.

The second change will see the launch of a new TfL ticketing app, which will allow customers to top-up and make purchases directly from the app and then linked to FUL, enable them to load it to their card via gates at any station.

When these changes were first announced, there was an invitation for staff to participate in trialling this new app and the FUL facility on the network. The trial was subsequently extended to include selected customers, to increase usage and obtain user feedback to improve the app and the user experience.

Over the next two months there will be some further major steps forward.

From late June 2017, Faster Universal Load will be enabled for Oyster Online purchases, enabling customers to pick up products from Gates and PVals at any rail station and from PVals at piers served by Riverbus services.

FUL will also be used for ad-hoc refunds for:
- *Customer requests for resubmission of missed automatic refunds*
- *Self serve refunds submitted by customers*
- *Service Delay Refunds*
- *Any other refunds generated by the Customer Contact Centre*

These changes to the processing of refunds should take some of the current guesswork out of where to send a refund if a customer has not nominated a specific station, as a refund will now sit at every station until it is collected.

From late July 2017 the new app will be launched with FUL for rail purchases. Customers will not be able to associate older Mifare format Oyster cards and will not be able to make bus and tram product purchases until FUL is launched on buses in the autumn.

File sent to ALL VALIDATION devices

LU gates and validators

TfL mobile app or Oyster card website

HOW FUL WORKS

Bus & Tram readers

NR, DLR and Overground gates and validators

CASH COLLECTION MATTERS

May is the time of year that we review the levels of cash collected from each location in the three months after the January Fares Revision, to ensure that the current collection frequencies match the current cash volumes. This will be the first review to be completed since the implementation of Cash Handling Devices across the network.

This is quite a long exercise, but does potentially give us the opportunity of making changes to collection times and days, if we need to do so for operational reasons.

Once the data has been collated and the optimum cash collection frequency for each location has been identified, we will then consult with the local management teams for any areas where we are considering a change to the current collection frequency.

The changes also need to be discussed with G4S before they can be implemented, so it is likely that any frequency changes will not take place until late summer or early autumn.

MISSED COLLECTIONS

Any missed or, partial collection must be;
1. *Reported via the Missed Collection Notification e-form and*
2. *Recorded as an entry in the Station log book.*

Please remember
➤ *The Station log book entry does not send a notification about the missed collection.*
➤ *It is the responsibility of the CSS / CSM on duty to ensure collections are completed.*

Finally - Where there is a missed collection at stations with weekly or fortnightly collections, a further notification must be completed on the day of the recovery collection, to confirm this has been completed or not.

Need the Mi-Apps link?
– Click here for the guide on how to install it to your iPad.

MYTHBUSTER

Edition 100 sees the return of one of our occasional TRU features, as over the last few months several "myths" seem to have sprung up around the creation and despatch of V&C items.

MYTH #1	"You aren't allowed to put cash in the V&C Sack"
THE TRUTH	Since the introduction of Cash handling Devices, we don't generally create a Cash Transportation Sack, so any invalid currency, damaged coins or notes and currency which is rejected by the CHD needs to be checked and despatched within a clear Counted multi-safe bag via the V&C Sack. This process of remitting bags containing small amounts of cash has been agreed with G4S, who will separate and process the items when the V&C Sack is opened at their cash centre. However we have received occasional feedback that some custodians have been reluctant to take V&C Sacks if money is inside. You can avoid problems by ensuring that any bags containing cash are not visible from the outside of the sack.
MYTH #2	"You can include other TSID card holder's items in one V&C bag, to avoid creating individual bags"
THE TRUTH	No, the principle of individual accountability means that only items belonging to the TSID card holder creating the V&C bag must be included.

ASK OLLY!

From: ▮▮▮▮▮▮
Sent: 16 May 2017 23:33
To: Ask Olly
Subject: **Young Visitor Discounts while waiting for replacement Zip Cards**

Dearest Olly,

I recently had an issue with an angry customer, who requested me to add a Young Visitor discount to an Oyster card that her child had been using while he waited for his replacement Zip card.

I declined to do this, as to my understanding we are not meant to apply the Visitor discount for children, unless they are visiting London. I told the customer the procedure and she told me she had been advised by Oyster that she could have this discount applied while waiting for the replacement Zip card.

This is not the first time I have been approached about this same situation, could you let us know what the procedure is and if we are not allowed to do this could someone tell Oyster so we don't have to deal with angry customers.

Many Thanks

▮▮▮▮▮▮
CSA
Angel Area

Dear ▮▮▮▮

Thank you for your email and for raising this query.

You were correct in not adding the Young Visitor discount to the Oyster card in the circumstances that you describe. The scheme was specifically set up to cater for young people visiting London who were no longer able to buy Child rate 7 Day tickets or use PAYG. It is not designed for London residents who may have lost or failed to renew their Zip card.

Monitoring is undertaken by TfL to identify cards that are repeatedly having the discount added and in such cases it may result in the card involved being disabled to prevent further use.

We will relay your comments about the incorrect information being given to customers ringing the Oyster Helpline to the team responsible for the management of the Customer Contact Centre.

Regards

Olly Oyster

Hi ▮▮▮

We had a similar issue a few weeks back with tickets issued by Trainline, but we were lead to believe that this had been resolved and all LU managed stations had been removed from the list of destinations available.

To clarify, barcoded tickets should not be issued for travel to LU operated stations as we have no method of validating them.

Customers buying online and opting to collect their tickets at the station prior to travel, cannot select LU stations to collect their tickets. They would have to opt to collect elsewhere and pick the tickets up in advance.

They cannot travel by showing an email or other confirmation as these are not valid for travel. Our Penalty Fare legislation requires the customer to be able to produce their ticket when requested, so they would have to be able to do this.

Regards

Olly Oyster

From: ▮▮▮▮▮▮
Sent: 07 February 2017 08:06
To: Ask Olly
Subject: Barcoded tickets on phones

Dear Olly,

I'm currently working at Amersham and I have noticed along with other stations on the group an increasing number of people purchasing tickets online and showing them on their phones or having a printout saying they have a ticket to collect.

I didn't think this was allowed on LU stations and had a discussion with a customer this morning about it. The websites allow people to buy tickets and they are doing so in good faith.

Would it be at all possible to have something in writing maybe in T&R news as to what the policy is regards these so we could at least have something to show anyone we refuse travel to if that's the case
Regards

▮▮▮▮▮▮
CSS Amersham Group
Metropolitan Line

From: ████████
Sent: 22 April 2017 09:22
To: Ask Olly
Subject: **Error Code 096**

Hi Olly,

Please tell me that Cubic are sorting out the code 096 on the POMs?

Ever since the new Chip & PIN readers have been installed it's a regular occurrence.

Cubic need to do a re-boot from their end which seems to take 10 minutes which is not good when you only have two POMs on a station.

It also seems to freeze the POM when this happens. I had a customer who topped up £5 when it froze with the code and she showed me on her phone that the £5 had come out of her account and didn't go on to her Oyster (which I checked).

When I spoke to cubic to put a job they said only a reboot would sort it out and would not put a job on it.

Thanks

████████
CSS2
Hornchurch Area

Hi ████

The error that you describe has been seen on a number of devices and relates to the device believing that a bankcard has been left in the card reader.

Cubic are currently investigating the cause of these incidents and a fix to resolve part of this problem will hopefully be deployed within a forthcoming software update to both the MFM and AFM. It can also occur on the AFM as well.

The customer that you refer to would not have been charged until the product was confirmed as having been loaded onto her Oyster card. This display on her phone is likely to reflect that the authorisation process has reserved funds pending completion of the transaction.

This does not mean that the money has actually been taken from her account. In the case of transactions like this that are not completed, the money would remain in the account and the reservation would be cancelled after a set period.

When reporting incidents like you describe to the Cubic Helpdesk, a reference number should always be issued, even if the matter is resolved via a remote re-boot of the device.

This will be followed up with Cubic, as the failure to issue a fault number impacts on device availability measurements and makes it difficult to accurately measure the frequency that these type of faults are occurring.

Regards

Olly Oyster

Dear ████

We have had similar observations from some other stations and have since carried out tests with Cubic and established that this is a network wide software issue.

It appears to occur when a group of 16 or more is selected and payment is made by cash.

We are hopeful that a fix for this can be deployed when a new version of MFM software is deployed next month, but in the meantime, there are a couple of suggestions to get round the problem;

- *Get the customer to pay using a bankcard, as the problem only occurs with cash payment*
- *If possible, break larger groups down into a number of smaller groups of more than 10, but less than 16*

We will provide an update on progress in deploying a fix to resolve the problem, once details are confirmed by Cubic.

Regards

Olly Oyster

From: ████████
Sent: 19 May 2017 13:43
To: Ask Olly
Subject: **Group Day Travelcard purchase failures**

Dear Olly,

We have seen an issue with our MFMs being unable to issue Group Travelcards. The issue being that once the number of persons had been selected, after the customer inserted a note, the MFM would cancel the transaction with a screen message that there had been an unidentified problem with the __card__ payment and the note would be returned.

We have had customers sent from other stations who have also been unable to purchase Group Travelcards, so please can you advise what is being done to resolve this issue?

Many thanks for your advice on this matter.

Regards,

████████
CSA
Camden Town Area

SPECIAL FEATURE

UTS @30

The end of April marked the 30th anniversary of the start of the Underground Ticketing System (UTS), a project which transformed the face of ticketing on London Underground.

The project delivered for the first time, a number of pieces of equipment that we are still familiar with today;

<div align="center">

MFM   **TOM**
SCU   **Pneumatic Gates**

</div>

The initial trial saw installation of the new ticket issuing equipment at **Hammersmith (C&H)** station in **April 1987**, before it was progressively rolled out to other stations over the following two years.

HAMMERSMITH C&H TICKET OFFICE WAS DEMOLISHED IN 2010

FEW FARE MACHINE

The concept had been proved during a previous trial at Vauxhall a couple of years earlier.

Although part of the project, the first gates weren't installed until the following year and even then were confined to stations in Zone 1.

This was done on the basis that at the time something like 70% of all tube journeys started or finished at a station in Zone1.

In the following years, as the whole of central London became gated, we improved the management of our gatelines and customers became familiar with using the new gates, there was a significant impact on the level of customer fraud and a reduction in the amount of revenue lost through fare evasion.

PNEUMATIC
(P) GATE

Prior to UTS only busy central London stations had self-service ticket machines known as "Autos" and most other stations issued the bulk of their tickets on card stock tickets.

Under UTS every station except Roding Valley and a couple of stations on the (now closed) Epping / Ongar branch of the central line received 2 POMs. The larger MFM, which had an array of coloured buttons rather than the touch screen format we are now familiar with, and the smaller FFM with 10 grey buttons covering the most popular fares.
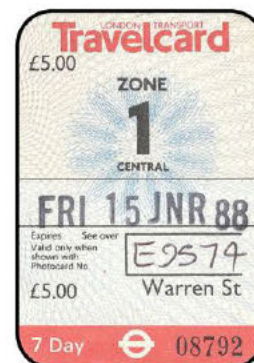
← ONE DAY, ↑ 7 DAY and PERIOD ↗ TRAVELCARDS

The MFM also gave customers the ability to use a £5 note for their purchases and both types of POM offered change when sufficient coin was available. It wasn't until later upgrades took place, that bankcard acceptance was introduced on the MFM.

The new POMs and the first generation of Ticket Office Machine (TOM) required each member of staff to have a magnetic sign-on card and PIN.

UTS TICKET OFFICE MACHINE (TOM)

MFM TICKET SELECTION BUTTONS

UTS @30 (Continued)

The cards, were originally known as UTS cards, a term still (incorrectly) used by some people today, were later renamed as Ticketing System ID cards (TSID).
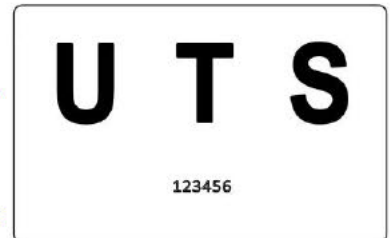
The new equipment magnetically encoded ticket stock to operate gates when they were introduced later and avoided the need to keep pre-printed value stock in the ticket office and replace this each time the fares changed. Roll stock used initially in the TOM and POMs was yellow rather than today's pink stock.

ORIGINAL UTS CARD

This wasn't the first venture into magnetic coding of tickets, as a different style of magnetic ticketing had been introduced in the late 1960s at the time the Victoria line opened, to operate earlier gates at these stations until their removal.

EARLY DESIGN AND NAME CHANGE

The transition was complicated with many ticket offices having to be substantially rebuilt to form new secure stores to house the ticket office, POMs and self contained accommodation for ticket office staff.
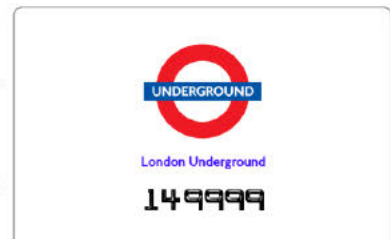
To achieve this, a set of temporary ticket offices often located outside of the station were utilised during the duration of the work.

CURRENT DESIGN AND RANGE

It wasn't just our staff that had to get used to new technology, as customers previously unfamiliar with self service ticket machines had to get used to using the machines.

Another big change under UTS was the linking of all devices on a station, via a Station Computer to a new bank of central system computers at **Baker Street**.

Although this allowed more timely and accurate sales data, we didn't completely dispense with paper based accountancy at stations.

➢ OUT - *went complex registers for recording sales of each type of ticket and balancing the station accounts daily and at the end of a 4 week accounting period.*

➢ IN - *came individual accountability, the Ticket Seller Daily Account (TSDA), POM Servicing Records, a Station Daily Account (SDA) - featuring the famous "4 corners" and a Station Weekly Account (SWA).*

A paper back-up was maintained until the TOM was upgraded onto a PC based platform and the computerised Station Accounting Facility (SAF) was introduced.

You can read more about the next chapter in the development of the TOM and SAF on **Page 20** in our *Project Updates* section of this edition of TRU. This continues the evolution of our ticketing equipment since the devices were first introduced.

Although the MFM may date back to 1987, there is very little inside the casing that is original, as successive upgrades have replaced most of the original components.

Part 3 – *Below are 5 clues to a station Olly has visited this month. Guess the station after the first clue and award yourself 5 points, 4 points if you require the second clue and so on until after the 5th and last clue you get just 1 point.*

Answers on Page 23

If you still haven't guessed after all 5 clues then it is "Nil Point".

Ticketing & Revenue
T&R
Trivia

| Pts	I'm at a station which...
5	Opened on 01 July 1879 as a terminus station in what is now Zone 3.
4	Was originally called Mill Hill Park.
3	Was rebuilt in 1910 and 1932, the latter was when it got its present name.
2	Serves two lines, is close to a depot and has a training centre.
1	Is in an area where 3 other tube stations also share its name. They have points of the compass in theirs... but this does not!

SPECIAL FEATURE

100 EDITIONS OF TRU

When TRU reached its 50th edition, we took a look back at how the publication had evolved over those 50 editions.

This time to celebrate our 100th edition, we thought we would take a nostalgic look back at some of the major T&R milestones that we have featured in these pages, since the first edition hit the ticket hall as What's Happening in May 2005.

As you will see, some major changes have taken place in those 12 years, with some of the new equipment featured in our early editions now being replaced again.
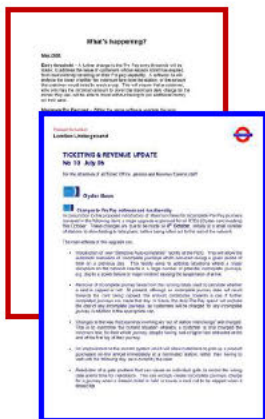
Editions 01-10

Our first ten editions saw 7 Day tickets being mandated onto Oyster, the introduction of *Child Oyster Photocards* and of *Privilege rate PrePay* (now PAYG) and on 19 November 2006 the introduction of *Maximum Fares* for incomplete PAYG journeys.

Early editions covered the introduction of new *Chip & PIN* technology on POMs and TOMs in the build up to 15 February 2006 which was titled "PIN DAY".

Amongst other ticketing changes from 02 April 2006 free travel on the Tube was extended to children under 11.

On an equipment front, we saw the start of the development of *ESAF* (Enhanced Station Accounting Facility), the first *Wide Aisle Gates* (WAGs) installed at LU stations and in TRU the start of a programme to convert 300 FFMs into new *AFMs*

Editions 11-20

Development of Oyster continued with introduction of the 16/17 Oyster Photocard and from 15 July 2007 LU ticket offices stopped accepting Personal Cheques.

TRU12 holds the record for being the shortest edition ever at 2 pages, whilst in TRU15 we carried our first coverage of skimming devices being attached to POMs.

In TRU17 we outlined the start of a trial of Oyster Charity Boxes and the start of a scheme which has supported the Railway Children charity for the last 10 years.

We also featured the completion of the rollout of ESAF across the network in March 2007, the deployment of AFMs and the rollout of 140 WAGs in the first phase of an initiative to make our stations more accessible.

Editions 21-30

Oyster developments continued with the launch of Zip branded Oyster Photocards for young people and the trial of including Oyster functionality on a chip in a mobile phone, but the big Oyster story was the build up to the expansion of *Oyster onto NR services* originally scheduled for May 2009 (commonly referred to as OXNR).

TRU21 included initial coverage of a project to provide a new handheld device for RCIs called *RAPID* - this didn't live up to its name and was subsequently scrapped. However 11 January 2009 did see *Penalty Fare* rise from £25 to £50.

TRU24 saw the first appearance of *Olly Oyster* and in TRU30 we celebrated a landmark edition with our first reader survey.

Editions 31-40

January 2010 saw a major step for Oyster with the eventual implementation of Oyster on NR (OXNR) and the short-lived Oyster Extension Permit (OEP). In TRU33 we outlined the introduction of Desfire a new format of Oyster card.

In other changes we saw the replacement of the Ticket Office Procedures Handbook (TOPH) with a new set of T&R Books on 17 May 2009.

Device wise, TRU31 reported on a second phase of WAG installations with 88 more WAGs, a trial of a new One Shot Release facility for the WAG and the completion of second phase of AFM installations, with 33 more AFMs. TRU39 reported the start of a programme to install new station routers, which are shortly due to be replaced.

Editions 41-50

TRU41 was our 5th anniversary edition and was one of a small number of editions where during a period of austerity, printed copies were in black and white.

Major Oyster related changes saw the appearance of the first *Limited Edition Oyster* card in April 2011, to celebrate the Royal Wedding, a pilot of an *Oyster card dispenser* in a number of AFMs and the withdrawal of the *Oyster Extension Permits* in March 2011.

We also saw the start of a programme to replace Station Computers – which we will be doing again shortly and in TRU43, the start of a programme to replace the motors on E1 gates which has recently restarted.

Editions 51-60

TRU 51 saw the initial launch of a new *Temporary Child Discount* on Oyster, for child visitors to London. This was to eventually become the Young Visitor Discount.

A busy period for upgrades saw the announcement of a further batch of 40 AFMs being approved and in TRU52 the launch of the *IOP programme* (ITSO on Prestige) a reader upgrade programme to prepare all devices for the introduction of contactless payments and ITSO.

Much of the space from TRU57 onwards was set aside for details of preparations for the *2012 Olympics*, whilst TRU60 our Diamond anniversary edition saw the launch of a commemorative Oyster for the *Queen's Diamond Jubilee.*

Editions 61-70

These editions reported upgrades, upgrades and more upgrades, 127 further *AFMs*, a new *QBM receipt printer*, *MFM note heaters*, the TOM/SAF *KVM switch* and the ability to dispense *multiple Oyster cards* from the AFM. TRU70 also saw us start work on a modified lid for the E2 gate, a project just about to start a further trial at Kings Cross.

On an Oyster front, we had a number of further limited edition Oyster cards, introduction of new *60+* and *Apprentice* Oyster cards and in August 2012 we marked the 10th anniversary of the introduction of the first Oyster cards to staff. We also reported on further activities related to the 2012 Olympic and Paralympic Games.

Editions 71-80

POM upgrades dominated the news. From 26 January 2014 new POM screens were trialled at Chancery Lane. In TRU73 we reported on a upgrade to the MFM to add an *Oyster card dispenser* and in TRU75 a further upgrade to add the Staff Functions from the AFM and in TRU79 the fitting of *Bank Note Recyclers* (BNR) units to the first 80 MFMs.

There were also big ticketing changes with buses going "cashless" in August 2014 and the launch of *contactless payment* on 16 September 2014. There was also a *"Year of the Bus"* Oyster card and introduction of *Police Oyster cards.*

Editions 81-90

Lots more changes, TRU81 reported on a Vanguard of the Oyster Refund facility on the MFM, TRU83 the start of trials of *Cash Handling technology*. We also saw announcements of a number of current/recent projects. TRU83 announced approval of *WAGs* for 74 further sites, TRU87 the first coverage of PED replacement and TRU88 a trial of an IM data connection to replace station routers.

06 September 2015 saw the end of *Cheque Acceptance* and in January 2016 the expansion of *PAYG to Gatwick Airport.*

Editions 91-99

The last 9 editions feature a lot of projects that are still on-going, but these editions have seen a number of significant changes.

TRU91 started a series of articles leading up to the introduction of *polymer banknotes* and the *new £1 coin*. TRU95 reported on the completion of the *CHD rollout* and we also saw the launch of the *Bus Hopper* on 11 September 2016.
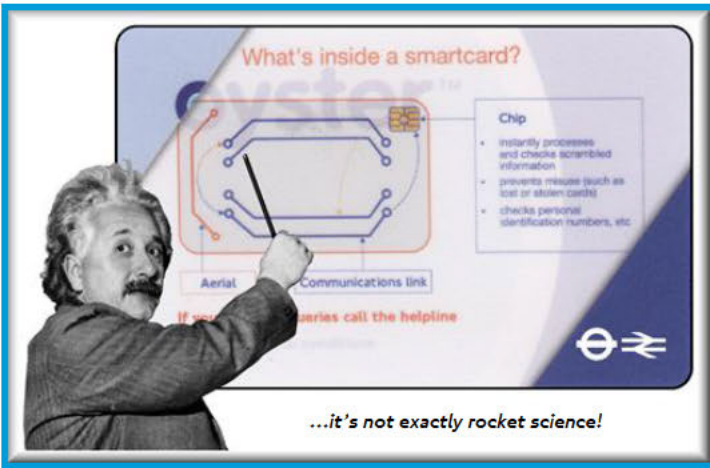
What's inside a smartcard?

...it's not exactly rocket science!

OYSTER EXPLAINED

AUTO COMPLETION

Our further coverage of this topic has been stimulated by a couple of recent events, which highlighted that some staff may not fully understand how Auto Completion works and as a result may be wrongly advising customers, leading to them potentially being over-charged.

In separate incidents over the last few weeks, we have been advised of at least two examples of stations displaying incorrect information on whiteboards, as illustrated in the photographs on the right. ➜

In a similar vein, we have also been made aware of a couple of stations making PA announcements during major events, during which customers using Oyster and contactless were being encouraged to not touch in or out.

In both scenarios the error is in not getting customers to touch-in, as this will prevent Auto-completion from working as intended.

The one important principle to note is that the customer should always be encouraged to touch in for Auto Completion to work correctly. In the examples on **Page 15** (opposite), we explain how Auto Completion works and what will potentially happen if customers are advised incorrectly.

Service information
Date WEDNESDAY 8TH FEB.
Time 05.15.
GATES ARE NOT WORKING
JUST WALK THROUGH THE GATES NO NEED TO "TOUCH IN"
THIS IS DUE TO A POWER FAILURE
YOU MUST "TOUCH OUT" AT YOUR DESTINATION OR AT A STATION WHERE YOU INTER-CHANGE
YOUR JOURNEY WILL BE AUTO-CORRECTED WHEN YOU START YOUR NEXT TRIP

WRONG INFORMATION #1

When should Auto Completion be used?

Auto Completion is a useful tool for stations where major events, large numbers of customers and limited gate capacity mean that it is necessary to set the gates in "Paddle Open" mode to speed the process of customers exiting the station or where secondary exits only have a limited number of PVals for customers to use.

The facility can also be used following a station evacuation or gateline failure, where customers may have had to exit without validating their cards.

When the setting is applied to the gates at a station or at neighbouring stations, if an Oyster card is validated on entry and has an unfinished journey for that day, it will automatically be resolved as if the customer had exited at the station where the journey is being Auto Completed.

This has a similar effect to selecting "Exit here" when resolving an unfinished journey using the staff screens on the AFM or MFM.

Use of Auto Completion can mean that a completely unrelated incomplete journey might be auto completed, when the customer actually travelled to a different station, but one of the advantages of our zonal fares structure is that nearby stations generally have the same fares.

Some important points to note about Auto Completion:

Service information
Date 19-04-2017
Time 07.32
AUTO-Complete in Action NO NEED TO TOUCH IN or OUT on your USUAL JOURNEYS.
NEW GATE INSTALLATION UNDER WAY.
THANK YOU FOR USING LONDON Underground

WRONG INFORMATION #2

 ➢ *Only works if customer touches in when returning to the station*
 ➢ *Will only work for unfinished journeys.*
 ➢ *Unstarted journeys (where the customer failed to touch in) cannot be resolved by this tool*
 ➢ *Only applies to unfinished journeys on the same traffic day.*
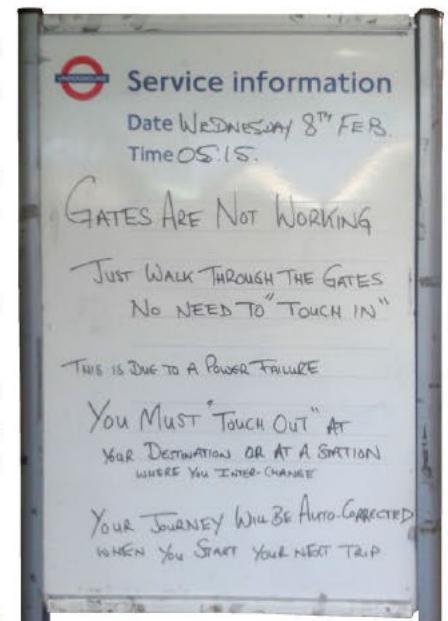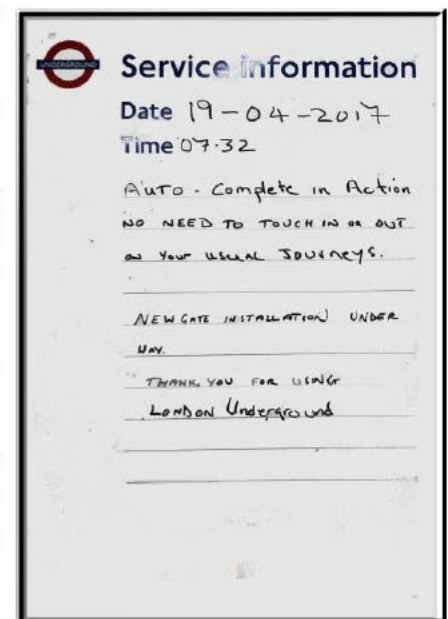
The same traffic day restriction is a bit of a problem if the incident leading to Auto Completion being applied happens late at night or where the affected customers may not be travelling back that night. For these scenarios, we have a further tool that can be applied to gates at one or more stations. This is Selective Auto Completion (SAC).
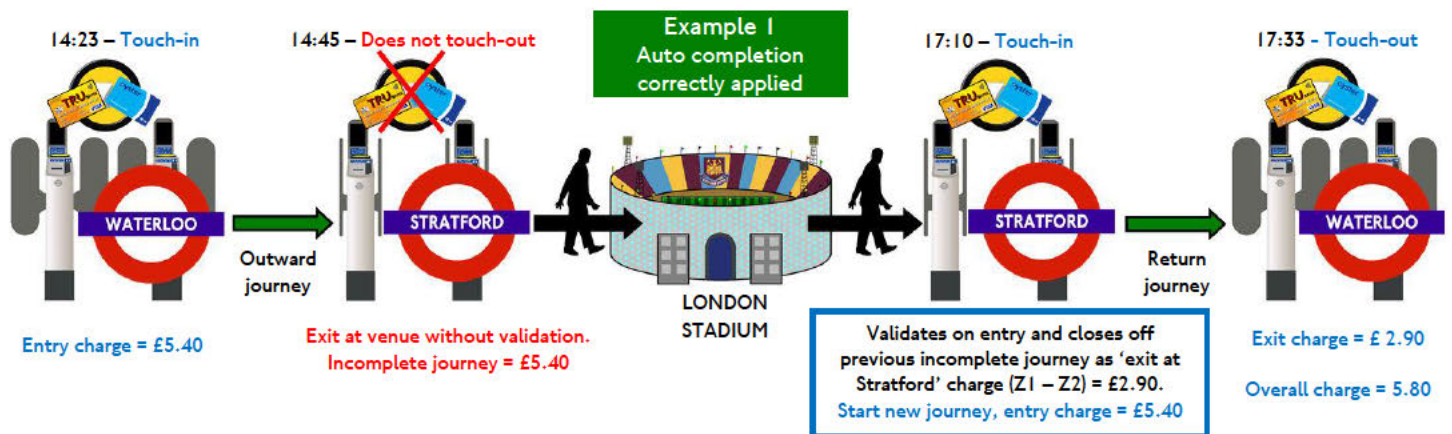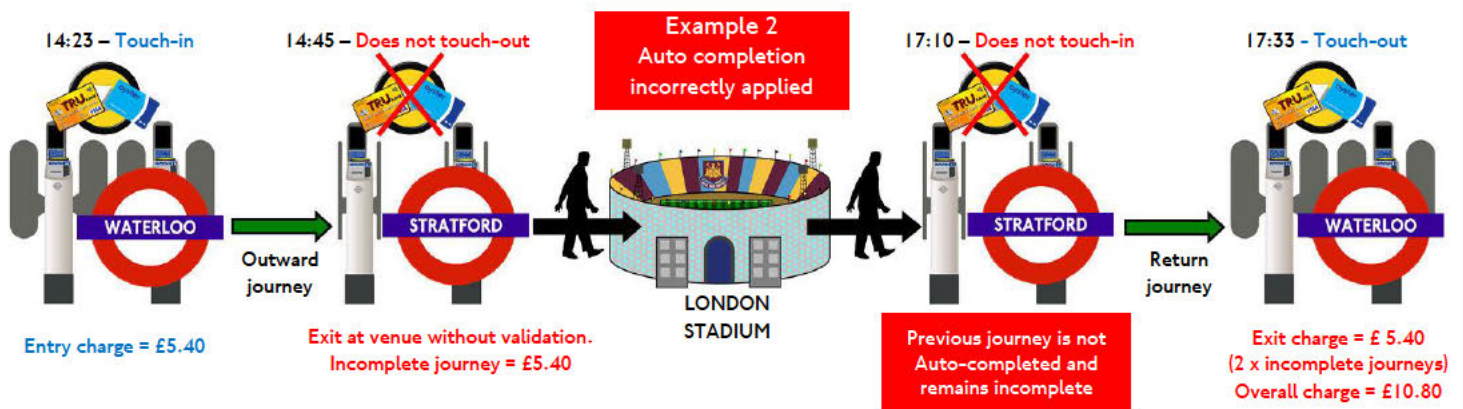
Selective Auto Completion can be set at one or more stations and will identify and resolve any unfinished journey that occurred within a particular time window on a certain date. This has the advantage of being able to resolve an incomplete journey on a customer's Oyster card which occurred the previous night or on a previous day.

Examples of correct and incorrect Auto Completion

Example 1 below illustrates a customer travelling to and from an event at the London Stadium and how having exited without touching out and incurring an incomplete journey, when touching-in on re-entry the customer's card is automatically charged the correct fare that they would have been charged had their previous journey ended at that station.

14:23 – Touch-in	14:45 – Does not touch-out	**Example 1** Auto completion correctly applied	17:10 – Touch-in	17:33 - Touch-out

WATERLOO → Outward journey → STRATFORD → LONDON STADIUM → STRATFORD → Return journey → WATERLOO

Entry charge = £5.40

Exit at venue without validation. Incomplete journey = £5.40

Validates on entry and closes off previous incomplete journey as 'exit at Stratford' charge (Z1 – Z2) = £2.90. Start new journey, entry charge = £5.40

Exit charge = £ 2.90

Overall charge = 5.80

In Example 2 below the gates are still open when the customer returns after the event. However, following advice from staff and an incorrect PA message the customer fails to validate on entry and on touching-out at Waterloo the customer also incurs a second incomplete journey. The total spend for their return trip is therefore £10.80, rather than the £5.80 they would have paid had they been correctly advised to touch in.

14:23 – Touch-in	14:45 – Does not touch-out	**Example 2** Auto completion incorrectly applied	17:10 – Does not touch-in	17:33 - Touch-out

WATERLOO → Outward journey → STRATFORD → LONDON STADIUM → STRATFORD → Return journey → WATERLOO

Entry charge = £5.40

Exit at venue without validation. Incomplete journey = £5.40

Previous journey is not Auto-completed and remains incomplete

Exit charge = £ 5.40 (2 x incomplete journeys) Overall charge = £10.80

LAL MXIDE PU

Ticketing & Revenue T&R Trivia

Part 4 – We've mixed up the letters in these station names. Can you work them out?

(a) BEE CORNET

(b) WHY HANG A HEAD AT ME

(c) OUR CARTELS

(d) BIG SKY RUN

(e) LOUDEST FISH

Answers on Page 23.

REVENUE PROJECTS

QBM PED UPGRADE UNDERWAY

After a number of postponements the first QBM was successfully replaced with an upgraded device fitted with the new design of chip & PIN unit (PED) on the night of **Thursday 27 April.**

As with the previous phase of the PED programme, when we reported on the upgrade of the first AFM, we thought it would be useful to include a pictorial record of the first QBM swap out at **Embankment.**

The newly upgraded device which has a significantly different front door includes the new PED, larger touchscreen and inside a new PC, interface board and power supply unit.

All did not go completely to plan and although the device was ready and available for customers to use at start of traffic on **Friday 28 April**, the revised software allowing TSID card holders and Cubic engineers to sign in with their Staff or Engineers Oyster card and TSID PIN, didn't work exactly as expected. This and some other minor issues not seen during the previous testing undertaken are now being investigated by Cubic.

Following completion of the first device we now plan to progressively expand the Vanguard to 10 devices over the following month. The devices planned to be included in the Vanguard are;

| BLACKFRIARS | GLOUCESTER ROAD | HOLBORN (x2) | SEVEN SISTERS |
| EMBANKMENT | HIGH STREET KENSINGTON | OXFORD CIRCUS (x2) | TOWER HILL |

QBM PED UPGRADE – HOW IT HAPPENS

Fig 1 – Before	Fig 2 – 1st stage of removal	Fig 3 – Fully stripped down	Fig 4 – New QBM lifted into place	Fig 5 – Complete

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PED UPGRADE

The upgrade of all MFMs has been completed and as you will read on <u>Page 16</u> (opposite) a Vanguard of the new style PED has recently commenced on a number of our QBMs. The bulk of our recent upgrade activities have been concentrated on the AFM,

With nearly 600 devices needing to be upgraded and a tricky extraction process restricting us to only being able to complete two devices per team each night, this is quite a long programme. This hadn't been helped by the number of bank holidays we have at this time of year and preparations for the May Fares Revision (see <u>Page 2</u>) preventing any AFM upgrades taking place between **16 and 20 May**.

The good news is that having completed the MFM rollout, some of these teams have been redeployed and trained up to boost the AFM programme to 3 teams rather than 2. So from **Sunday 21 May** we will be aiming to complete 6 devices per night rather than 4, meaning a target of 30 machines per week.

Bankcard Acceptance Stickers

If any POM on your station has a new PED, but is either missing the new sticker (shown on the right) or has no sticker at all, station staff should report this to **Auto 84663** or send an email to ▆▆▆▆▆▆▆▆▆ and a replacement sticker will be sent to you.

If a POM is displaying two different types of bankcard sticker, the old version of sticker must be removed as soon as possible.

MFM & AFM SOFTWARE UPDATES

Following the recent completion of the PED rollout on all of our MFMs, attention has turned to the updating of the software, to address the final issues identified during testing and during deployment of the new PEDs.

Early in the programme it had been identified that a number of critical issues would need to be resolved in the version of software used for the Vanguard, whilst other less urgent issues could wait for the final release of the software during rollout.

In the meantime, the discovery that a number of fraud fixes had not been included in the MFM PED software, required us to deploy an emergency release in early April to fix this. Timescales for this were short and as a result, there wasn't enough time to include and test other items planned for the "Final" software release. This has effectively pushed back the deployment of the final version of MFM software.

Testing of this and an updated version of AFM software have recently been completed by Cubic and we were preparing for a short Vanguard of each, before the software is deployed to POMs across the network. However, the recent concerns over cyber security threats have prompted the deployment of a Windows upgrade patch to protect these devices and this is now being deployed ahead of the planned software upgrades.

We will be looking to avoid rolling out new software to both AFM and MFM at the same time, but there is likely to be an overlap whilst we Vanguard the second device during the rollout of the first.

The new software includes a number of fixes which won't be particularly obvious to users or customers. However, there are a couple of significant changes:

➢ *Card reader light – instead of a green light showing at all times, the green light will in future, only illuminate when the payment screen is reached. It will not illuminate if the device is set to "No Cards" mode or if there us a fault on the PED. This should hopefully avoid confusion around whether card payment is available.*

➢ *Transaction limit increased from the current £650 to £750 and now more easily configurable so that future changes can be made via a base data table change, without the need to change the device software for each type of POM.*

➢ *Resolution of an issue on the MFM which results in an incorrect screen being displayed when a large number of Group Day Travelcards are selected and payment is attempted with cash (this issue is highlight in an Ask Olly letter on <u>Page 9</u>.*
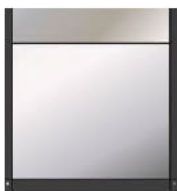
REVENUE PROJECTS

UPGRADE OF BANK NOTE RECYCLERS

Immediately following the withdrawal of legal tender status for the old paper £5 note, we commenced a week long programme to update the note sets held in each of our 98 MFMs with Bank Note Recyclers (BNR) units. The upgrade visits undertaken during the day between **Monday 08 May** and **16 May**, will also prepare these devices to be able to accept £10 polymer notes when these are introduced by the Bank of England and the 3 Scottish note issuing banks later this year.

AN IMAGE OF JANE AUSTEN WILL BE ON THE NEW £10 NOTE

The preparation of the BNR units for the £10 polymer note will mean that until the new notes come into circulation we will have a slightly reduced capacity for recycling £10 notes.

The larger of the two recyclers designated for £10 notes will continue to be used for the current paper £10 notes, whilst the smaller recycler is set aside for £10 polymer notes. So until September, this smaller recycler will be empty. When the new polymer notes enter circulation, the device will initially dispense paper notes in preference to polymer.

A further upgrade visit is planned to swap the designation of the £10 recyclers, so that the larger capacity unit will then be redesignated for polymer notes, which will then be dispensed in preference to paper notes. This revisit will be done in conjunction with the updating of the Coin Handling Unit (CHU) to stop these devices accepting the old design of £1 coin.

BANK NOTE RECYCLER

We will provide further information on the updating of the other MFMs that have the standard Bank Note Accepter (BNA), to stop these accepting paper £5 notes and get them ready for the new polymer notes, once the programme for this work has been finalised. In the meantime, as we outlined in **TRU99**, any paper £5 notes that are accepted by the MFM should be banked via the CHD in the normal manner.

BNR & BNA RELIABILITY

Since the introduction of the polymer £5, the performance of MFMs fitted with both the Bank Note Recycler (BNR) and the Bank Note Accepter (BNA) have suffered as a result of note jams and note related faults.

As we have previously reported, one of the major issues on the BNA units which caused the note vault shutter to close prematurely when more than one note was inserted, was resolved by an upgrade visit to each device. However, since then we have seen a steady rise in note related problems on both the BNR and BNA units.

Cubic have been investigating these issues and have adopted a number of initiatives to try and resolve them, including an increase in the frequency of cleaning of the BNR units, following concern that the smooth waxy surface of the new notes was contributing to an increase in faults.

In recent weeks two further initiatives have taken place. Firstly the upper section known as the note bundler on four of the worst performing BNR units were replaced with brand new modules in early April. Cubic have subsequently replaced the note bundlers on the 10 MFMs listed in the table on the right. ➔

Station	MFM
EARLS COURT	32
EUSTON	30
GREEN PARK	31
HEATHROW T123	31
MARBLE ARCH	31
OXFORD CIRCUS	30
PADDINGTON	30
SEVEN SISTERS	30
SOUTH KENSINGTON	30
WATERLOO (Colonnade)	30

The performance of these units is being closely monitored by Cubic, against performance of other devices. Early indications seem to show a reduction in failure rates per period compared to the network average, but it is early days yet.

Funding has been identified to replace further units if a significant improvement in performance can be achieved. In a parallel piece of work on MFMs with BNA units, there are indications that there may be a need to replace the drive belts within the BNA unit more frequently to avoid notes slipping and jamming during their journey to the vault. We understand that a number of BNA units have been replaced with units that have been re-belted during workshop overhauls, but at the time of going to print, we have been unable to establish the locations or devices involved.

LCP3 UPDATE

Further to our last update on this long running gate project, we are pleased to be able to report the achievement of a major milestone on **Wednesday 03 May**, when the last of the stations with E1 gatelines were completed. Revisits to **Highgate**, **Holloway Road** and **Shepherds Bush Market**, complete a small number of outstanding walkways that had not been completed by Cubic on their original visit.

All stations with E2 or E1 gatelines are now fitted with LCP3, but individual WAGs that were installed before the recent round of WAG installations at stations with older pneumatic gates have not yet been upgraded. These will be picked up when we visit these locations to fit the new LCP to the pneumatic gates.

As we reported in TRU98 & TRU99, a Vanguard of the LCP3 has been underway on gatelines at **Liverpool Street (Central)** and **Tower Hill** stations since mid-February. However the new software has not resolved a long running pneumatic gate issue, where the gate paddles fail to open after the customer validates their card.

Cubic are currently pursuing a number of different lines of investigation, in an attempt to resolve this long running issue, including replacement of different components on selected gates at several stations, including the 2 Pneumatic Gate LCP Vanguard stations, where the beam windows on a number of walkways have been replaced to see if this reduces the instance of this fault occurring.

The work completed and the specific gates involved are shown in the table below ⬇.

Solenoid / pilot valve replacement				Beam window replacement			
Station	P-Gate			Station	P-Gate		
QUEENSWAY	41	42	43	LIVERPOOL STREET (Central)	76	77	78
PICCADILLY CIRCUS	46	47	48	TOWER HILL	40	41	42
				SOUTH KENSINGTON	47	48	49

Results from these devices will be collated and compared with the performance of other devices.

Cubic had also hoped to extend the P Gate Vanguard by upgrading the pneumatic gates at **Old Street** with the LCP3 and a new version of software during a small window of opportunity before the May fares revision.

However, the new software failed to complete the necessary testing to enable it to be released before the start of the fares revision moratorium. The upgrade of these gates has now been delayed until **early June.**

Two other pieces of work also remain to be completed. The WAG gatelines at **Heathrow Terminals 123** and **Heathrow Terminal 4** were originally upgraded with the LCP3 as part of the original E2 rollout. However, some issues were identified with restarts of these devices occurring after certain failures, causing the transaction count on the affected device being reset. As gate count data from the two stations is used to determine payments between LU and Heathrow Airport, a decision was made to revert the gates at both stations to the pre- LCP3 configuration.

Since reversion of the Heathrow gates, subsequent upgrades to the E2 Gate LCP software would appear to have resolved the original issue, but there has been an obvious reluctance to reintroduce the LCP to the gates at these sites until we were 100% confident that the count data would not be adversely affected.

The Technology & Data team are currently comparing gate data from a number of major sites to ensure that the level of gate restarts is no higher than on the current Heathrow gates. Hopefully this will give us the green light to return to Heathrow and re-upgrade the WAG gatelines in the near future.

The other gates that are outstanding fitting of the LCP3 are at **Ashfield House**. Cubic have made a couple of recent attempts to upgrade the gates at our training location, but this has proved more complicated than we had expected.

It initially transpired that the work that should have been completed during an earlier gate programme had not been completed at Ashfield House. A follow-up visit to resolve this identified further complexity around how "training sites" are reported. Work continues to resolve both aspects.

REVENUE PROJECTS

TOM & SAF TO GET MAKEOVER

CURRENT TOM/SAF

Under the terms of the current Revenue Collection Contract (RCC), Cubic are required to replace components on a regular basis and ensure that each asset has residual life, should the contract ever be terminated.

We therefore have regular Asset Refresh projects, covered by a Product Assurance (PA) budget, where components that have or will become obsolete are replaced or more modern versions of particular items are implemented, to improve long term performance and reduce maintenance costs.

CURRENT TOM/SAF PERIPHERALS

Although the SAF PC was last upgraded as part of a PA project in late 2015, it is now time to replace the TOM PC and to migrate the software onto a more modern Windows 7 operating system, like other devices. Recent worldwide events have highlighted the need for equipment to be running on operating systems that are fully supported.

As part of the development work for this, Cubic have been looking to improve the current arrangement of linking the TOM and SAF via a KVM (keyboard Video Mouse) switch.

Later this year, we are looking to trial a new TOM/SAF solution at two stations that have the standard TOM / SAF arrangement and two further sites that also have additional TOMs in other parts of the secure suite.

The planned upgrade will include:
- *New SAF cabinet to include both TOM & SAF PCs and uninterruptable power supply unit (UPS)*
- *Modified software to prevent TOM reporting errors due to absence of Chip & PIN unit and Ticket Handling Unit (THU)*
- *KVM functionality to switch between TOM and SAF integrated into green and yellow keys on new keyboard (as can be seen in the image to the left)*
- *New TOM PC operating on Windows 7, like the current SAF*
- *New TOM keyboard and receipt printer*
- *SAF configured to work with new receipt printer. At present if the TOM is not operational, it is not currently possible to print any receipts as the SAF does not recognise the current TOM receipt printer*
- *Rationalisation of a number of menus to remove a number of unused or redundant options*
- *Rectification of a number of defects that have been identified since the last TOM software release was completed*

NEW TOM/SAF

The prototype of the new TOM/SAF Combination (illustrated above right) is noticeably different to our current kit, with the peripherals and the new cabinet being black rather than white as we currently have.

In the example shown, the layout includes a Newbury magnetic ticket printer (to the left of the screen) and a new design of Chip & PIN unit (to the left of the keyboard).

These components will be supplied to Visitor Information Centres (VICs) that are also equipped with a version of the TOM, but LU sites will not have these additional items when they are upgraded.

The forthcoming rollout of the new Chip & PIN units (PEDs) to VICs will require the new TOM PC to be fitted before the new PED can operate, so the VICs are likely to be upgraded with the new equipment in advance of the start of the Vanguard on LU stations.

Due to the differences between the LU and VIC set-up and operations, the two will in future have different versions of software and menus.

SC3 UPGRADE

As reported in TRU96, in **November 2016**, a new type of Station Computer (SC), known as the SC3 was installed at **Tooting Broadway** as part of a planned Vanguard of this unit on LU.

This new SC had previously been successfully deployed on National Rail and other modes at a large number of stations which have PVals and where the SC is located within the cabinet housing one of these validators.

Tooting Broadway was the first installation on LU, with its more complex infrastructure of connected devices and much heavier levels of transaction traffic.

Plans to expand this Vanguard to three further stations listed below, were postponed until after the January Fares Revision had taken place and have since been further delayed to avoid potential disruption to upgrades needed to prepare for the launch of Faster Universal Load (as outlined in our article on Page 6).

Once the May Fares Revision has taken place, Cubic are planning to upgrade the SCs at the above sites during the first week of June. **Euston** on the night of **Sunday 04 June**, **Canary Wharf (Mezzanine)** the SC serving the E2 gateline, but not other devices on the station, on **Tuesday 06 June** and the final Vanguard location, **Oxford Circus** on **Thursday 08 June**. Although we have not seen any issues at Tooting Broadway since the first unit was installed there, the expansion of the Vanguard will introduce more complex stations, more devices and higher levels of transactions.

On successful completion of this Vanguard, it is planned to rollout the SC3 to other LU stations between **September 2017 and March 2018**.

DEVELOPMENT OF NEW PC BASED SCU

Cubic recently completed the replacement of all of our Station Control Unit (SCU) monitors with modern flat screen versions. As indicated in our historical look back at the rollout of the UTS Project 30 years ago on **Pages 10** and **11** the SCU is one of the original pieces of equipment introduced onto our stations as the project was rolled out.

NEW FLAT SCREEN SCU

The recently removed monitors were therefore one of the oldest items of ticketing kit still in use on our stations.

This upgrade was very much a stop gap measure, as the screens were becoming increasingly difficult and expensive to maintain and in many cases the quality of the display made text quite difficult to read. This should hopefully keep us going until a new design of PC based SCU becomes available next year.

This planned upgrade which will cover both Ticket Hall SCUs and those located within POM Rooms, Station Offices and Control Rooms is planned to be rolled out in **early 2018**, but before then there are a number of steps that need to be completed;

➢ **Surveying of all LU sites with office SCUs to determine optimum locations for the new SCU**
➢ **Upgrade of Station Computers to the new SC3 (as outlined above)**
➢ **Installation of Ethernet cabling to the new SCU locations**

FORMER CRT SCREEN SCU

The project does give us the opportunity to reinstate a number of SCUs that were wrongly removed during the Fit for Future Stations ticket office closure process and to move equipment to a better position within some of our offices. A programme of site surveys will be scheduled during the summer so that we can provide the relevant information to Cubic by September.

REVENUE PROJECTS

WAG PROGRAMME COMPLETED

The recent completion of the new E2 gateline at the Palmer Street entrance of **St James Park** station and an expanded gateline at **Euston Square** brought us to the end of the latest phase of Wide Aisle Gate (WAG) installations.

ST JAMES'S PARK

During this fourth phase of installations additional WAGs have been installed at 74 different sites, improving access for wheelchair users and customers with pushchairs and bulky items of luggage at many stations that did not previously have a WAG and adding additional WAGs at several stations.

One further station remains to be completed; **Lancaster Gate** which is currently closed, where work to replace the original pneumatic gateline with new E2 gates and a WAG will take place during the period that the station is shut for lift replacement works.

Some remedial work is still required to bring a number of the new gates into the correct numbering sequence and remove temporary device numbers that were used for some of the newly installed gates.

Where a single direction E1 gate is replaced by a bi-directional E2 gate, new base data has to be loaded to provide a temporary number to allow the new gate to be installed.

ST JAMES PARK – PALMER STREET

ONE SHOT RELEASE

Following the completion of works, the original number needs to be reconfigured as a reversible gate before an engineer visit to the site to restart the device on its correct number and change the device numbers. The embargo on base data changes in the run up to the May Fares Revision means that we have not been able to make all of these changes, but all should be completed during June, following the next base data load on **Sunday 04 June**.

At a number of stations where gates are monitored from the Station Office (SO) at certain times of day, a "One Shot Release" (OSR) button should have been provided in the SO to allow the remote release of the WAG from there. The outstanding works will now have to be completed as a separate package of work, as additional cabling needs to be installed.

E2 GATE LID DAMPER TRIAL

In **TRU97** we provided an update on a very long running trial of a modified lid mechanism for the E2 type of gate.

KING'S CROSS

As we reported way back in **TRU85**, all of the E2 gates on the **Kings Cross (Western)** gateline were upgraded with a new soft-close mechanism in **July 2015**.

Since then, following feedback from staff at the station and H&S representatives, Cubic have been working to find a solution, that not only self-closes, but can be relocked without the key having to be inserted. This potentially overcomes a number of problems that have blighted the E2 gate lid since their introduction.

The new design which has recently been demonstrated at the Cubic System Test facility at Salfords, replaces the current locking mechanism, which is a common cause of lids not being able to be locked. It will also allow the gate key to be removed from the lock whilst the lid is open. On the current design, staff attending to gate problems have to leave their keys in the lock, whilst dealing with the issue.

The necessary components to upgrade all of the 22 gate lids at **Kings Cross (Western)** have now been delivered to Cubic and we are hopeful that the gates can be upgraded on the night of **Thursday 25 May**. This will then enable us to start a second trial to determine whether the new design of lid is suitable to be rolled out more widely to other stations with E2 gates.

A NEW ROUTE FOR OUR DATA!

In **TRU88**, we outlined details of a 4 station trial of an alternative connection between the Station Computer (SC) and the Data Gathering Centre (DGC) computers in December 2015.

At **Farringdon, Lambeth North, Lancaster Gate** and **Regents Park**, we replaced the usual Station Router with a new connection utilising the TfL IM network.

Following a successful trial, plans are now being prepared to progressively migrate all of our other stations away from using routers provided by Level 3 onto a fixed connection utilising our own IM network. At most sites this will require installation of cabling between the Station Computer Room and a connection into a nearby connection into the IM network.

Once installed there will then be a further visit to disconnect the existing router and switch over and test the connection via the IM network.

Further details of the programme for this work will be included in future editions of TRU, but one early site likely to join the 4 trial sites above, is likely to be **Victoria (District)** where the forthcoming switch to a new NLC, will see the installation of a new SC connected to the IM network rather than using a router. The provision of the IM cabling is one of the factors that have delayed completion of this work.

CASH HANDLING DEVICE UPGRADES COMPLETED!

Scancoin have recently completed a programme of visits to each of our Cash handling Devices (CHDs), to bring each up to the latest versions of software. **SCAN COIN**

All devices should now have the revised sign on screen indicating that the "Start" button should only be used by Scancoin technicians and security company custodians and the additional screens that show the device contents in graphical form.

During the visits, the devices have also been loaded with new note sets to enable them to accept and process polymer £10 notes when these are introduced by the Bank of England and the Scottish note issuing banks in September.
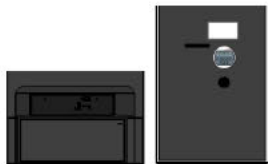
In previous TRUs we had outlined plans to make further changes to the coin processing software on the CHD to enable us to separate the new and old designs of £1 coin, but recent feedback from Scancoin has unfortunately confirmed that the old design of £1 coin cannot be diverted to the overflow or separated, without the very expensive and complicated installation of an additional hopper inside the device.

We will therefore be continuing with the current arrangements of banking mixed bags of old and new £1 coins. We will then programme Scancoin to visit each station to switch off acceptance of old £1 coins once POMs have been upgraded to reject these.

ANSWERS TO T&R TRIVIA

Pt.1 Q1 **D** Metropolitan / City of London | Q2 **C** British Transport Police
SEE PAGE 3

Pt.2 Q3 **B** Lark Locks
SEE PAGE 7

Pt.3 WHERE'S WOLLY? ACTON TOWN How did you do?
SEE PAGE 11

Pt.4 SEE PAGE 15
LAL MXIDE PU

(a) BECONTREE (b) DAGENHAM HEATHWAY (c) EARLS COURT (d) KINGSBURY (e) SOUTHFIELDS

KEEPING AN 👁 ON THE NEIGHBOURS

IS THE WRITING ON THE WALL FOR MAGNETIC TICKETS?

Over 100 editions of TRU we have documented the growth in the use of Oyster, initially on LU and then onto other modes and more recently the gradual growth in the use of contactless payments. The period has seen a significant movement away from magnetic ticketing and today on the LU network, the sale of magnetic tickets now only accounts for a very small percentage of ticket sales and journeys made.

Times are changing on National rail too, where there has also been a steady movement away from traditional magnetic stripe tickets. In the London area this has ben greatly helped by "the Oyster effect" with customers switching away from magnetic season tickets, which regularly failed to work automatic gates, to Travelcards on Oyster and more recently moving away from the purchase of season tickets to the use of PAYG.

Regular TRU readers will be aware that a number of the Train Operating Companies (TOCs) in the south east area have launched their own branded *Integrated Transport Smartcard Organisation* (ITSO) smartcards to allow customers, particularly those travelling from stations outside the Oyster area, to utilise more modern technology for their travel. The switch to Travelcards and Season tickets on ITSO format smartcards, which can also be read by our gates, will further reduce magnetic ticket sales.

This is likely to expand to other TOCs as the switch to the use of smartcard ticketing is included within the terms of their new franchises.

There are also a number of other technological changes that are helping to speed a decline in magnetic ticket sales, with online ticket purchases being sent direct to a phone or mobile device and the use of barcode readers on gates to be able to read QR barcodes.

It remains to be seen how long magnetic ticketing continues given the gradual shift to other forms of ticketing.

NEXT ISSUE

So that's it for our celebratory 100th edition.

Hopefully TRU won't be assigned to Room 101 and we look forward to bringing you a further edition towards the end of June.

Next month it is back to a slightly slimmed down version, but there will still be plenty to update you on.

In our next edition, we will include;

- *A review of the May Fares Revision*
- *Updates on progress of current projects*
- *Details of the next phase of our preparations for the introduction of polymer £10 notes and the withdrawal of the old design of £1 coin*
- *A further look at Incomplete PAYG Journeys*

Plus a further selection of your letters and queries to Olly Oyster, the latest T&R News stories and all our other regular features.