

## Ticket Vending Machines: Design Guidelines

December 2016

# Contents

1.	Purpose .....	3
2.	Introduction .....	3
3.	Stakeholders .....	3
4.	Related Documents.....	4
5.	Stakeholder Consultation & Customer Research.....	4
6.	Scope.....	4
6.1.	In scope .....	4
6.2.	Out of scope.....	5
7.	Guideline Principles .....	5
8.	Design Guidelines.....	6
8.1.	The ORR information principles.....	6
8.2.	Workflow guidelines .....	6
8.3.	Fares guidelines .....	7
8.4.	Station selection guidelines .....	9
8.5.	Information guidelines.....	9
8.6.	DDA compliance guidelines .....	11
	Appendices.....	12
	Appendix 1 – Findings from Customer Insight Groups .....	12

# 1. Purpose

This document provides a set of design guidelines for the self-service Ticket Vending Machines' (TVMs) Graphical User Interface (GUI) that, if adhered to, will improve the ticket purchasing experience for customers and reduce the risk of customers purchasing the wrong ticket.

These guidelines are not mandated, however they have been reviewed and agreed with all stakeholders including TOCs and existing suppliers and it is therefore expected that they will drive future development.

These guidelines should be seen as a living document and will be updated regularly with the results of new research, reports or other observations.

# 2. Introduction

In November 2014 the Daily Telegraph published an article highlighting issues its reporters had found with TVMs that would result in customers paying more than was necessary for their ticket. This was identified as being a particular problem at stations where competing operators' TVMs were installed and seen to offer different fares for the same journey.

In response to the Daily Telegraph article the then Minister of Transport Claire Perry called a TVM summit which was held on the 11<sup>th</sup> December 2014. The summit was attended by the Minister, by senior employees from the TOCs, ATOC and the TVM suppliers, and by the ORR and Transport Focus.

At the summit Transport Focus made a presentation of the issues identified by them and by the Daily Telegraph article, and three work-streams were agreed to address those issues; these were 1) where possible to immediately resolve any issues identified in the Transport Focus presentation, 2) to place labels on every TVM making clear the limitations of the TVMs and in particular the range of tickets the TVM can, or cannot, sell, and 3) to create guidelines for the graphical user interface of TVMs that if adhered to will reduce the risk of customers purchasing the wrong ticket for their journey.

This document is the output of workstream 3 – the Design Guidelines. It has been created through consultation with key stakeholders, review of existing customer testing, and some targeted customer testing looking at specific TVM issues. The Design Guidelines are not mandated and it is not intended that they be applied retrospectively; however they have been reviewed and approved by key stakeholders and they were launched at the TVM workshop held with the key stakeholders on the 23<sup>rd</sup> July 2015.

It is expected that TVM suppliers and TOCs will use the Design Guidelines as a reference against which to develop future TVM changes and thereby improving the ticket purchasing experience for customers and reducing the risk of customers purchasing the wrong ticket.

# 3. Stakeholders

The following stakeholders approved this document:

- The ATOC Fares Working Group
- RDG
- The TOCs via the Fares and Retail Group, and via Commercial Board

The following are stakeholders in this document but were not required to approve it:

- The TVM Suppliers

- Transport Focus
- ORR
- The DfT
- RSP TIS Accreditation / Compliance Standards

## 4. Related Documents

There are already several published documents relating to TVMs that capture some level of design requirements and that feed into these guidelines. These are:

- **Self Service Ticket Vending Machine Good Practice Guide**  
Produced in 2008 this document is a guide to most aspects of TVM operation covering such areas as physical position, maintenance, and staff interactions. Where the Good Practice Guide covers GUI requirements, and only where appropriate, these have been incorporated into this Design Guideline. It is recognised however that the Good Practice Guide is several years out of date and thus some of its GUI requirements are no longer valid.
- **Related RSP accreditation guides**  
No part of these Design Guidelines are intended to supercede the series of RSP Accreditation guides that relate to TVMs.
- **A Code of Practice on retail information for rail tickets and services**  
The ORR’s “Code of Practice on retail information for rail tickets and services” proposes four principles that are useful in setting out information and it is intended that these Design Guidelines follow them.
- **Ticket Vending Machine Usability – Qualitative Research**  
A Passenger Focus report produced in 2010 on usability of TVMs. Several of the recommendations in that report are included in these Design Guidelines.

## 5. Stakeholder Consultation & Customer Research

In order to understand the stakeholder requirements for the TVM Design Guidelines a consultation paper was circulated to TOCs, suppliers and Passenger Focus. Feedback from that consultation is incorporated in these Guidelines.

Six Customer Insight Groups were held with customers for their feedback on existing TVMs and to identify issues they experience when purchasing tickets. The findings of these groups are in Appendix 1 and have fed directly into these Design Guidelines.

It is strongly recommended that more in depth and independent research should be conducted and incorporated into these guidelines, including review of other digital self-service methods.

## 6. Scope

### 6.1. In scope

The scope of these guidelines is:

- Self Service TVMs
- To document design guidelines for the Graphical User Interface
- For the guidelines to be applied to future TVM developments

## 6.2. Out of scope

Out of scope of these guidelines is:

- Collection only TVMs
- Any consideration of non-GUI requirements such as TVM positioning, labelling of machines, and branding
- Hardware changes to the ticket hopper
- Mandated development in accordance with the guidelines
- Retrospective development of existing interfaces
- Timetable feeds
- NRS links and journey planning for the retail of Advance fares

## 7. Guideline Principles

A number of principles have been followed in writing these guidelines:

- **The guidelines must be generic enough to be applicable across all TVMs...**  
It is intended that all TVM suppliers should be able to adhere to these guidelines but it is not intended that the user interface across all is standardised. As such these guidelines focus on areas such as workflows and information provision rather than such as screen designs.
- **...but they must be detailed enough to be able to deliver against and measure that delivery...**  
Without measurable requirements it will be difficult to demonstrate delivery against these guidelines. Delivery should be measured against the specific guidelines rather than against user outcomes as the latter would require more in-depth and independent customer research and continuous monitoring.
- **...whilst not limiting innovation or new entrants to the market.**  
These guidelines must leave existing TVM suppliers free to innovate and must not limit the ability for new entrants to the market.
- **The guidelines must reflect customer research.**  
It is important that the guidelines reflect actual customer needs rather than perceived needs. A small amount of customer research has been conducted prior to writing these guidelines but much more extensive and independent research is strongly recommended.

Any such future research should focus on testing use cases and workflows to ensure customers are able to achieve the desired outcomes; research should not focus on the layout or screen design where this would be expected to be specific to the TVM supplier or TOC.

- **They must have buy in from all stakeholders.**  
It is not intended that these guidelines should be mandated therefore it is only with buy in from all stakeholders that they will be delivered.
- **They must be forward thinking so as not to require continuous rewriting.**  
We can't necessarily predict future retailing capabilities and needs however the guidelines have been future-proofed to a degree by focusing on customer experiences and outcomes rather than a technical specification

However the guidelines are a living document and will need to be periodically revised to account for changing customer needs.

- **They must be supported by a delivery roadmap**

Although these guidelines are not to be mandated it is expected that with stakeholder buy-in there will be a commitment to deliver against this over a period of time. Through consultation with all stakeholders a roadmap for their delivery will therefore be created

## **8. Design Guidelines**

### **8.1. The ORR information principles**

The ORR's draft "Code of Practice on retail information for rail tickets and services" gives four principles that retailers should adhere to in providing information. In developing TVMs suppliers should adhere to these principles:

- Principle 1 – retailers should provide passengers with the information they need to make informed decisions;
- Principle 2 – retailers should provide the information that passengers need in a way that is clear, intelligible, unambiguous and timely;
- Principle 3 – the information retailers provide should be accurate, complete and should not be provided in such a way as it might deceive or mislead, even if factually correct; and
- Principle 4 – retailers should make it clear what tickets are/are not available at each sales channel and the basis on which they identify and recommend tickets to passengers.

### **8.2. Workflow guidelines**

#### **8.2.1. Customers should be able to choose between an interrogative workflow or quick buy options**

Current TVMs place a high level of emphasis on the customer finding their way to the right ticket rather than the machine guiding the customer to the ticket which is right for them. However the most popular destinations and tickets make up by far the greatest number of transactions made through a TVM and many customers know exactly the ticket they want.

A balance is therefore needed between the TVM emulating the ticket office clerk and asking lots of questions to narrow the options down, versus managing the length of the transaction to deliver one recommended fare only.

The TVM should therefore offer both options from its first screen; quick buy options for confident customers (e.g. "I know what I want") and an interrogative option for less confident customers ("help me find the best fare") which would tailor the response to their requirements eg fastest service, next service, cheapest service etc.

Multi-purpose machines that do not sell just tickets, such as ones where ToD can also be collected as well as car parking tickets, should include quick links to these alternative functions from the first screen.

#### **8.2.2. Customers should be able to filter tickets to their requirements**

TVMs can present customers with a long list of tickets and fares often for products customers have no interest in, for example a customer might be price sensitive or alternatively might be looking for maximum flexibility.

TVMs should therefore enable the filtering of fares to match the customers' requirements. Such filtering should however not be at the expense of making clear the restrictions that apply to a ticket, and should not be done in such a way as to hide other fares.

### **8.2.3. Customers should be able to buy their tickets with the minimum number of actions**

Irrespective of the customers' chosen workflow tickets should be able to be purchased with the minimum number of actions whilst recognising that an interrogative workflow would by necessity require more actions than the quick buy workflow.

For example:

- Selecting a station should not require a customer to navigate through several screens before being presented with a station input screen (**8.4 Station Selection Guidelines**)
- Presentation of non-essential information might be via a side bar or action rather than integral in the workflow.

### **8.2.4. There should be a clear and compelling on screen link between the screen and the ticket issue hopper**

An often reported problem is customers leaving tickets and/or reservations behind irrespective of TVM manufacturer. There should therefore be a clear and compelling on screen indication of the total number of coupons to be printed and how many remain to be printed.

Whilst not a design guideline this could also be linked to the ticket issuing hopper to, for example, keep the hopper closed until printing has finished, or use red green lighting to indicate progress.

### **8.2.5. Off-peak fares should be offered in sufficient time to purchase them and catch the train**

Customers have reported that some TVMs do not allow sufficient time from automatically offering off-peak (and super off-peak) fares from when they become valid to allow passengers to purchase and physically get to the platform and board the first train on which that ticket is valid.

Sufficient time should therefore be allowed. This should be through a system rule of eg 10 minutes, which can be amended by local station profiling if necessary.

### **8.2.6. Customers should be reassured they have bought the correct ticket**

This should be by confirming back to the customer that the ticket purchased meets the criteria they searched for and by displaying what the ticket entitles them to do (**8.5 Information Guidelines**)

## **8.3. Fares guidelines**

### **8.3.1. Never sell a ticket without making clear if cheaper alternatives might be available**

If there is a cheaper alternative ticket available via the TVM that might allow the customer to travel on their specified journey this should be made clear.

It is accepted that limitations of TVM retailing mean that TVMs will not be able to advise on some alternative products eg Advance products or mobile only fares, or might not be able to accurately advise on the suitability of some products eg Returns. However, as TVMs continue to evolve and these limitations are addressed, then the alternative cheaper fares messaging should also evolve.

There is some evidence that customers are not always clear on the differences between 'Anytime' and 'Off-Peak' services, particularly with regard to what services an 'Off-Peak' ticket would entitle them to travel on, therefore cheaper fares should be made clear even if, for example, the customer has explicitly chosen an 'Anytime' ticket and the cheaper alternative is an 'off-peak' ticket that the customer has already rejected.

The cheaper alternative fares should be presented without the need for additional actions by the customer. Any such fares therefore need to be presented in a clear and compelling way with appropriate on-screen labelling to explain them

Examples where customers have been observed to purchase more expensive tickets:

- 'Anytime' instead of 'Off-peak' tickets to give them "peace-of-mind"
- 1 Adult + 1 Child when a 'Kids go free' ticket is available
- Buying a more expensive single ticket when a cheaper return is available

The TVM workflow will not necessarily be able to advise on cheaper tickets that are only available through alternative channels, for example on-line or via the ticket office. These exceptions should be addressed in the TVM on-screen labelling (**8.5 Information Guidelines**)

### **8.3.2. Where two tickets "do the same" only show the cheapest**

Some tickets have no or only subtle differences in validity. Where this is the case the more expensive of these tickets should be suppressed so only the cheapest is displayed to avoid risk that passengers overpay

### **8.3.3. Make clear where fares are for a specific operator or where they are inter-available**

On flows where there is a choice of operators, TVMs should make it as clear which tickets are valid only on a particular TOC and which can be used on any operator. It should be kept in mind that passengers may not easily recognise abbreviations such as "VTEC only" and this should therefore be through the use of TOC logos, TOC branding and use of the full TOC name.

### **8.3.4. Always show prices before a customer is asked to choose a fare**

A customer should never be asked to choose a ticket without first being presented with the price or, where they are choosing a ticket category, the price from.

When choosing tickets from the 'quick buy' list there is evidence that customers remain unaware of alternative, non-quick buy, options; therefore once a customer has chosen a ticket they should always be presented with alternative fares.

### **8.3.5. Advise if there are cheaper fares if the customer is willing to wait a few more minutes**

Customers will sometimes buy an 'Anytime' fare to travel on the next available service when they could have bought a cheaper 'Off-peak' ticket if they were willing to travel on the subsequent service.



The customer should therefore be advised if a cheaper fare is available if they are able to wait a few more minutes. This should be through a system rule of eg 10 minutes, which can be amended by local station profiling if necessary

## **8.4. Station selection guidelines**

### **8.4.1. The station input screen should always be available**

The station input screen should be available at any point in the workflow where a customer might want to select a station.

### **8.4.2. There should be flexible input methods**

Station input can be a barrier to customers choosing a journey. Station input should therefore be flexible responding to a number of different criteria, for example:

- It should respond to key word and partial word entry rather than first to last letter, for example to select "London St Pancras" the customer should be able to type "St Pancras" or "Panc"
- It should recognise CRS codes
- It should allow the customer to choose destinations, for example "Oxford Circus" rather than "Zone 1"
- It should allow the customer to switch between the qwerty and ABC keyboard

### **8.4.3. Stations should be displayed from a central list**

TVMs should display all stations from a live central list of stations and, if necessary, use local profiling rules to remove any stations not required.

## **8.5. Information guidelines**

### **8.5.1. Information should be sourced and described consistently across all TVMs**

The TVMs should use industry standard data feeds to ensure consistency of information across all TVMs, examples include:

- IDMS feeds for London Terminals, route text, ticket types, and station names
- PMS feeds for restriction text and validity information (in development)
- NRE feeds for "What Can I Do with My Ticket?" information including valid services and routes (proposed development)
- Central stations feed
- Other PMS feeds via the new PMS publish and subscribe mechanism
- Real time train running

Consistent terminology for key concepts should be agreed for example:

- "What Can I Do with My Ticket?"
- "What time can I travel?"
- "What trains can I catch with my ticket?"

- 1st Class not first, Standard Class not std
- 5-15 yrs on child fares

In order to keep the interface clear and uncluttered non-essential information should be identified and removed and information should be presented contextually where appropriate.

These feeds and terms will need to be agreed as part of the delivery roadmap.

### **8.5.2. Short form text should never be used**

Short form text should be replaced with the full text for example with restriction text but also with any other text displayed in an abbreviated format. Where necessary the industry feeds should be updated to provide this.

### **8.5.3. There should be no requirement for additional TVM labelling**

The only signage/labelling that should be fixed to TVMs is that of Methods of Payment, ie card types. All other messages should be built into the software and be displayed to customers. For example:

- Child age warnings
- Ticket validity
- Information highlighted in the TVM labelling proposal

### **8.5.4. Locality contextual information must be controlled under local profile rules**

Information such as that included in the TVM Labelling proposal is largely contextual to the TVM location. Changes to such information should not require software changes and should therefore be amendable under local profiling rules so any changes to the TVM's capabilities can be quickly communicated to the customer.

### **8.5.5. There should be the same consistent access to information from every screen**

By using a consistent method to access information from every screen within the workflow the customer will quickly become familiar with how to find this information. The information should be contextual to the current scenario

### **8.5.6. Full ticket information should be displayed**

A lot of ticket information is currently not displayed to customers including in some cases:

- A list of valid routes
- A list of valid TOCs
- The entitlement to break journey
- The entitlement and method for refunds
- Ticket Ts&Cs
- The validity of zonal tickets eg stating where a zonal ticket is valid for only a single journey to or from a station within the specified zone.

### **8.5.7. Details of the selected ticket should be displayed throughout the transaction**

Details of the selected ticket should be presented on every page sufficient to ensure the customer can easily confirm what they selected without having to return to the selection page.

### **8.5.8. There should be a link to the NRCoC**

Prior to purchasing a ticket the customer should be presented with a link to the National Rail Conditions of Carriage. This should be a clear link and should not be hidden.

### **8.5.9. The maximum retail value should be displayed**

The TVM should display to the customer the maximum value of tickets that it can retail prior to the customer beginning any transaction. If a customer selects a ticket or combination of tickets that exceeds this value the TVM should clearly advise them and suggest ways to reduce the value eg buying tickets for multiple passengers in separate transactions.

### **8.5.10. There should be an FAQ page**

There should be an FAQ page accessed from any screen to for example address questions currently answered by use of labels on the machine front (payment methods accepted, refund arrangements, compensation arrangements, what to do if the ticket you want is not available, what to do if part of your ticket does not drop etc).

There should be a default list of pre-installed questions that can be edited locally.

## **8.6. DDA compliance guidelines**

The TVM screens should be DDA compliant

# Appendices

## Appendix 1 – Findings from Customer Insight Groups

### Background

During February and March 2015, National Rail Enquiries (NRE) held 5 customer insight groups with NRE customers in a variety of locations across the country. The purpose of these groups was to gather thoughts about ticket terminology and ticket vending machine usage.

It should be noted, that the facilitators of the groups do so without market research qualifications, and the insights gathered here are intended solely to supplement the formal market research being collated elsewhere in the project.

### Participant Recruitment

The participants were recruited through NRE channels, customers were invited to participate in an NRE-led group where we were asking for their thoughts on behalf of the rail industry. In exchange for their time and thoughts, we would provide reasonable public transport travel expenses and £50 in the form of a high street shopping or rail travel voucher.

Interested participants were invited to fill in a short online survey about their background and rail usage and which group they were interested in attending across the 3 locations: Birmingham / Newcastle / Canterbury.

NRE received over 3000 expressions of interest in attending and recruited participants were chosen to try to achieve a mix of backgrounds:

- Commuter / business / leisure
- Age
- Railcard vs non-railcard
- Male / female
- Accessibility requirements

12 participants were recruited for each group, with an expected 50% dropout rate on the day.

### Methodology

The groups were scheduled to be 90 minutes long and had the following agenda:

- Welcome and purpose
- Fares initiatives overview
- Insight gathering
  - Ticket terminology
  - Ticket Vending Machine scenarios (using TVM emulator)
- Questions

### Findings

#### **Ticket terminology**

3 terms were examined in the ticket terminology session:

1. Any permitted
2. London terminals
3. Route direct

## **Any permitted**

Customers recall seeing this frequently. Many customers expected this to mean that they could travel on any 'reasonable' route. Others thought that the clue was in the terminology, and the term actually meant – 'any (route, is) permitted' – in which case they could go any way that they liked with any train operator. Some customers thought that there wouldn't be any restrictions if the train was direct, whilst others got the idea that some routes aren't permitted, but had no idea where they could find out what was or wasn't possible. One customer made the point that they wouldn't travel a circuitous route on purpose, so didn't understand the need for the term – why would someone deliberately take an invalid route?

We tested the idea of "any valid route" with customers and this was agreed to be clear that there were some routes that weren't valid, but customers made clear that they needed to be able to easily find out what was or wasn't valid. Many customers stated that if they weren't clear, they would ask a member of staff, and that staff and customers should be able to see the same information.

## **London terminals**

Many customers thought that this meant any London National Rail station. Universally it was agreed that a London Terminals ticket wouldn't allow travel via the underground, but the groups were split as to whether customers could use a circuitous route to get to a London terminal that was outside of the norm – most thought this would be possible if they had an 'any permitted' ticket and they travelled only on National Rail.

Customers weren't clear for the need for a London terminals ticket, with the introduction of many Advance purchase tickets which say the station, some saw London Terminals as a way of confusing the customer in an attempt to get them to buy a more expensive ticket.

One customer accused the railway of giving false information by showing London Terminals on a ticket when it was only valid for some London terminals.

We tested the term "valid London terminals" as an alternative. Whilst customers agreed this was clearer, they preferred the valid London terminals to be listed on the ticket. Customers were ambivalent about whether this would decrease their flexibility by restricting the number of terminals you could travel to – it was felt that in the majority of cases, there would likely only be one or two London terminal stations that most people would travel to anyway.

## **Route direct**

Most customers felt that this term meant that they could travel on a direct train, they were surprised when told that this might not be the case.

We recommend that the term be used only to describe direct journeys, or be withdrawn altogether.

## **TVM Testing**

Participants were asked to purchase a tickets via a variety of scenarios using a TVM emulator.

Findings from the TVM session are as follows.

Finding your location on the TVM should be as easy as possible. Customers should be easily able to search for any station (rather than only select from 'popular destinations'. Many customers recalled seeing an A-Z station search on screen before and were looking for this. When in the search, customers expect the search functionality to operate like journey planning website functionality.

- Start page should have A-Z search
- Station search should search anywhere in the station name – e.g. EUS should return London Euston

- Station search should utilise 3-letter codes in addition to full station names e.g. BTN for Brighton

Once a destination has been chosen, customers should be able to easily find the ticket they are after. Customers shouldn't have to translate industry jargon, or be searching through multiple pages of ticket options in an attempt to find tickets they're expecting to see. In one example, customers struggled to understand that "Anytime R" was an anytime return. Customers expect ticket machines to calculate the best combination of tickets for their journey, using the emulator customers had to purchase an adult and child ticket – whilst many were able to add the child ticket onto the adult journey, the machine did not automatically offer a cheaper alternative ticket option, in this case "Kids go free". The offer was a separate ticket type "hidden" on another page customers felt that this was an attempt by the industry to defraud them out of money.

- Full ticket names should be used not abbreviations
- The cheapest option for the combination of tickets you're purchasing should be automatically calculated and included
- Next page buttons should be obvious and stand out from content

Customers are confused about which tickets to buy – for example when should they get an off peak ticket? They're annoyed by machines that do not allow them to buy off peak tickets before what they see as the 'off peak time'. Routes for journeys are particularly difficult, they're not sure which route they should be picking and would welcome more information at the time of selecting the route to allow them to make an informed decision.

- Ticket types should explain when they are valid for that journey e.g. Off Peak Return should show when off peak is for the outward and return journey
- Restrictions in usage should be shown e.g. message saying "You've got 15 minutes to use this ticket" or "valid on any train before 1600"
- Should show journey length / number of changes / next train times against route options
- Plusbus should be shown on the TVM (it should be easier to purchase/add onto a ticket)
- If a ticket type is unavailable, this should be shown as unavailable to stop customers being confused and having to ask a member of staff

In trying out various scenarios, various usability enhancements were identified:

- If there is a limit on what can be sold on the TVM – e.g. no transactions above £250, this should be stated at the time that the ticket is displayed on screen
- The ability to filter what tickets are presented after choosing options e.g. Single / Day Return / Return would be welcomed
- A similar style to journey planning functionality on websites should be used on screens