



Enhancing the accessibility of payment terminals

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Introduction

This paper aims to address the accessibility challenges faced by visually impaired people when using payment terminals. The recommendations presented are based on extensive discussions and submissions made within the European Blind Union's Payment Terminals Accessibility Working Group. The goal is to ensure an inclusive and accessible transaction experience for all clients.

The European Accessibility Act is the relevant legal framework for improving accessibility in the EU single market. It applies to products placed on the market after 28 June 2025, including payment terminals¹. Payment terminal manufacturers must adhere to the accessibility provisions defined in the act as well as relevant European Union accessibility standards, ensuring accessibility for visually impaired clients.

The need for payment terminal accessibility for visually impaired users is more critical than ever before. In today's digital age, payment terminals have become ubiquitous in our daily lives, serving as gateways to essential services and transactions. However, the rapid development of touch screen or smartphone-based solutions poses a significant danger of leaving a substantial portion of the population, including people with visual impairments behind.

¹ Directive EU/2019/882, Article 2(1)(b)(i)

Recent developments in the industry have seen prioritization of sleek and modern designs that heavily rely on touch screens, making them less accessible to individuals with visual impairments. This exclusionary trend not only hinders financial independence but also limits access to basic services and participation in the broader economy. As we move towards an increasingly cashless society, the urgency of addressing these accessibility challenges cannot be overstated.

While the European Accessibility Act establishes the legislation and provides general recommendations, it does not currently define the specific technical requirements for accessible payment terminals. In this context, the European Blind Union seeks to complement the European Accessibility Act by offering additional insights into the unique needs of visually impaired users concerning payment terminal accessibility. The aim of this position paper is to provide valuable recommendations, solutions, and best practices for the development of accessible payment terminal solutions, filling the gap and ensuring that the act effectively addresses the needs of all users with visual impairment.

Definitions

Payment terminal

The European Accessibility Act defines ‘payment terminal’ as a device the main purpose of which is to allow payments to be made by using payment instruments as defined in point 14 of Article 4 of Directive (EU) 2015/2366 – i.e., a personalized device and/or set of procedures agreed between the payment service user and the payment service provider and used in order to initiate a payment order – at a physical point of sale but not in a virtual environment.²

In this document, we refer to two kinds of payment terminals:

- Terminals with push-button keypads.
- Terminals where the push-button keypad is replaced by a touchpad or a touch screen. This includes smartphones used as payment terminals.

² Article 3(29)

Unless mentioned otherwise, generalized recommendations apply to both types of terminals.

Screen reader

A screen reader, in the context of a touch screen payment terminal, is an assistive technology that interprets the information being displayed on the screen and provides audio feedback. This allows visually impaired users to understand the content and navigate through the options available on the touch screen. The screen reader can read out text, identify buttons and payment amounts, and guide users through the payment process.

Must, should, could

The words Must, Should, and Could in this document are used as follows:

- **Must:** This feature, setting, or customization is necessary to provide an accessible transaction experience for visually impaired clients.
- **Should:** This feature, setting, or customization would make the transaction process significantly more accessible and inclusive. Its absence can create additional challenges for some clients.
- **Could:** This feature, setting, or customization is optional. However, it designates accessibility features that would improve the user experience and ease of payment for users further, thus they are highly recommended.

Hardware recommendations

General

All payment terminals should have:

- Large, easy-to-read screens.
- Speakers for audible feedback.
- Standard 3.5mm headphone input or an equally streamlined and popular solution for audio transmission.

Warning: it is strongly recommended not to use a terminal with a touch screen or touch-sensitive keypad as the only input option. While accessibility could be provided on touch-only systems, they will create an additional learning curve for the client and are currently unfamiliar to many users. Thus, using terminals with only touch-sensitive inputs creates significant additional accessibility challenges for clients, including, but not limited to the following:

- Blind people will not be able to independently locate the different controls and enter data. Getting familiar with the layout using a voice interface can take additional time.
- People with low vision will have significant trouble reading the screen and identifying controls, as a tactile option is not available as a backup.

But if this warning is ignored, see below our recommendations for terminals with touch-screen only input.

Terminals with physical push-button keypad

- All keys must be easily distinguishable by touch. The layout should be logical and consistent.
- For the number pad, the keys should be arranged in the standard telephone layout, and the spacing between keys should be sufficient for the client to be able to find a key by touch alone. The buttons should be large enough to be easy to press.
- When a button is pressed, the user should be able to feel its activation through the button's perceived movement.
- Tactile markings: the number 5 button must have a tactile dot on it for the client to be able to orient themselves on the keypad.
- Buttons critical to completing a transaction (such as delete/clear and enter/confirm) must have clear tactile pictograms (e.g., a circle for OK, a line for cancel). A button for confirming the transaction must be labelled with a green colour, a cancel button with red colour.
- The keys must have large, high-contrast labels. Colour alone should not be used to distinguish between buttons. For example, while it can be clear that a green button confirms and a red button cancels the transaction, a colourblind individual might not be able

to distinguish between those two colours. Thus, an additional visible label on the button is necessary.

Terminals with touch-screen only input

For touch screen-only terminals, at least two accessibility features must be provided, with at least one of them not requiring additional hardware, such as headphones.

Touch-sensitive keys should be indented or have raised edges so they can be identified tactilely. The keys must be arranged in a logical and consistent layout, and the edge of number 5 should have a raised, tactile dot above the number area.

As an alternative, a physical tactile overlay must be used to make the flat touch panel tactile. The overlay could be integrated into the terminal to ensure its constant availability and easy deployment or dismissal for each transaction that requires it. The merchant must be aware of the overlay and its functions, and the overlay must be available to use immediately when the client requests it.

If none of the above is possible, a fully accessible user interface must be available. See the section “User Interface” below.

Each registered button activation must provide a tactile response. This could be achieved, for example, via a haptic or vibration motor inside the terminal. Alternatively, sound feedback must be provided.

To allow maximum flexibility and privacy, haptic patterns (i.e., tactile vibration) could be used to communicate sensitive data when the terminal is used with a screen reader but without a headset. As there is no standard methodology to communicate digits through haptic patterns, this must be tested with users.

The controls on the touch screen must have large, high-contrast labels. Colour alone should not be used to distinguish between buttons. For example, while it can be clear that a green button confirms and a red button cancels the transaction, a colourblind client might not be able to distinguish between those two colours. Thus, an additional visible label on the button is necessary.

User interface (UI) recommendations

The following applies to both types of terminals: those with push-button keypads and those with touch screens.

Visual UI

The visual UI should include a large, bright screen with large text and high contrast, and conform to the European Digital Accessibility Standard En 301 549.

Users with a low vision should be able to customize the visual UI, namely and not limited to increase the text size, change the background and/or text colour, adapt the screen brightness and contrast to the surrounding lighting conditions, or zoom the screen. It must be possible for the client to enable these options via a simple key command (for instance pushing the 5 digit for a few seconds) or a flag/token associated with their payment instrument. The settings should revert back to default settings after a successful transaction.

Colour alone should not be used to identify controls, status, or types of elements on the screen.

When a transaction is in progress, information related to the transaction must be clearly distinguishable from other information on the screen (e.g., ads, promotions, logos, branding).

Sound

Sound alerts or speech prompts are necessary to guide visually impaired clients through the transaction process. It is important that the sound volume is sufficient based on the surrounding noise conditions. These prompts should indicate various steps, including prompts for card entry, amount to be paid, PIN entry or contactless payment, confirmation, and transaction status (succeeded/failed – if available, the reason or the contents of the error message should be read out).

All speech prompts audible to the public (played on the terminal's loudspeaker) must be generalized, meaning no transaction details or entered digits should be read out loud or recognisable, to protect the privacy of clients and their data.

Additionally, audio signals could be used to indicate the user's position on a virtual numerical pad when entering a PIN code, allowing PIN entry without headphones.

The volume of audio alerts should adapt to surrounding sound levels or should be easily customizable for each transaction.

If sound alerts are not enabled for all transactions, it must be possible for the client to enable the feature via a simple key command (for instance pushing the 5 digit for a few seconds) or a flag/token associated with their payment instrument.

Speech

A speech-based accessibility system must be available through a standard 3.5mm audio jack or via an equally streamlined and popular technology. Upon plugging in the headset, a speech-based accessibility system must start automatically with instructions on how to use the terminal and a description of its physical layout. The language of speech should default to the terminal's user interface language and change upon the user's request via an easy mechanism or when the client enters their card, and their preferred language can be detected. In addition to the local language, at least English should be available.

All the following functions must be available through the speech interface: customizing the volume of speech; determining the amount to be paid; editing the entered PIN; and announcing various transaction steps and messages, including but not limited to:

- Transaction started (e.g., prompt for card entry or contactless payment).
- Confirmation of the amount to be paid.
- Any additional prompts, such as amount to be tipped or currency to be paid with.
- Prompt for PIN entry, announcing the number of PIN digits.
- Pin digit press registered. The pressed digit could be spoken.
- Delete button pressed. The deleted digit could be spoken, or the current number of digits in the entry field could be announced instead.

- Confirm button pressed.
- Transaction succeeded with a confirmation of the amount paid.
- Transaction failed. The reason or the contents of the error message should be read out.

It should be possible for the user to turn off or dim the visual display for the duration of their speech-based transaction to protect their privacy.

Activating accessibility mode

If accessibility mode is not activated directly by the merchant, as indicated above (UI recommendations), it must be possible for the client to activate it easily, through a single key command or (for speech-based accessibility) through plugging in a headset.

For touch-only terminal, especially for blind users, the screen reader should be activated through determined gestures, such as a simple gesture on the touch screen (for example, holding with 2 fingers for 3 seconds).

Upon activation, the screen must respond to swipe and tap gestures in a common way known to be used in smartphone and computer-based accessible touch interfaces to minimize the learning curve. Currently, a set of universal gestures has emerged across several devices and industries top provide speech feedback for touched based UIs, including:

- Swipe right = Read next element
- Swipe left = Read previous element
- Double tap = Activate last spoken element

Smartphones and other emerging solutions

Upon the client's prior preference set in their bank, when making a card-based transaction, the transaction amount could be communicated to the client through their banking app, a private website or any similar, secure method on their phone, where the transaction can be confirmed or rejected.

Additionally, when using a smartphone or smartwatch as a payment instrument (e.g., Apple Pay or Google Pay), the amount to be paid could be displayed on the client's phone/watch before the transaction is confirmed.

Besides the smartphone-based solutions outlined above, several new terminal and card-related technologies are emerging with the potential to improve accessibility further. These include, for example:

- A credit card with an integrated fingerprint reader to bypass PIN code entry on terminals.
- A credit card that, when entered a terminal, is able to communicate the amount to be paid via Bluetooth to a personal smartphone or watch.

For banks and merchants, it is highly recommended to research these emerging solutions and, if proven beneficial, provide them for clients and merchants. These are just examples and are not intended as an endorsement, as a comprehensive accessibility evaluation has not been carried out.

Involving visually impaired users

Involving visually impaired users who represent different types of visual disabilities in the development and user testing of payment terminals is highly recommended. Their valuable insights and feedback can provide essential guidance in creating the most user-friendly and accessible process possible. By actively engaging visually impaired individuals throughout the development cycle, payment terminal manufacturers can gain a deep understanding of the challenges faced by their target users. This collaborative approach ensures that the final product meets the diverse needs of visually impaired clients, resulting in a more inclusive and user-centric solution.

Conclusion

Improving the accessibility of payment terminals for visually impaired clients is a vital step towards inclusivity and equality. The European Accessibility Act sets a timeline for payment terminal manufacturers to provide accessible solutions by 28 June 2025. By adhering to the hardware and user interface recommendations outlined in this position paper, banks and merchants can ensure that visually impaired clients have equal access to payment services. Together, we can create an inclusive and barrier-free payment experience, promoting independence and accessibility for all.

About EBU

The European Blind Union (EBU) – **Interest Representative Register number 42378755934-87** – is a non-governmental, non-profit making European organisation founded in 1984. It is one of the six regional bodies of the World Blind Union, and it promotes the interests of blind and partially sighted people in Europe. It currently operates within a network of 42 national members including organisations from 26 European Union member states, candidate countries and other countries in geographical Europe.

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