- Guiding intentions/overall design layout:
  - High signal-noise ratio - eliminate all unnecessary data and simplify by semantic grouping.
  - Expand scope of potential users beyond those capable of driving - user may be passenger.
  - As few physical interactions as possible, which should end up fast and streamlined, and challenge people's physical dexterity and visual acuity the least. Elderly are limiting users.
  - Follow cultural expectations of information flow, i.e. start top left, move right and down.
  - Use the seven stages of action model (Norman, 2002) for quick simulation and heuristic evaluation of the user interface, and then compare with standards for conclusive statements.
- Piepenbrock *et al.* (2013) found that positive display polarity results in better proofreading performance for all ages, despite the BSI (2011) statement that the elderly preferred negative polarity, performance for all was prioritised over subjective preference for some.
- Environmental considerations - to be usable at any time of day/night:
  - We chose font size with the Context Calculator (Loughborough University, 2013) visible at both day and night at 1m by >95% of population as smallest font size (44pt), with emphasized text 150% this size and bold, with the sans-serif font Arial.
  - The machine would be oriented North to minimise glare and reduce luminance from the sun
  - All static (non-screen) text is black on backlit white bounding box to provide night visibility.
- Time-Price comparison and Time selection:
  - A button for each possible option allows for a semantic grouping of time, price, and selection interaction, as well as providing an easy way to demonstrate the state of the world: once a button is pressed, a ring around the button can light up, and the backlighting of the text can increase compared to the other times/prices. Changing one's mind is also handled simply - pressing a different button deselects the first and selects the second, with associated lighting.
    - One concern was too much information, but a range of 1-24 hours can be appropriately covered in 6 options, within 7 +/- 2 pieces of information in working memory (Miller, 1956).
- Other buttons: confirm - cultural 'proceed' indicators - green and tick, a tested large size for visual dominance. Cancel is only other button, smaller and red - resets choice and returns coins.
- ≥15mm gap between all buttons. All buttons protrude so any finger size can press.
- Coin slot fits all UK coin sizes and has small protruding channel at bottom to aid coin insertion
- The screen would be bright green 7 segment on black (BSI, 2011), and follow Thimbleby (2013). Separated from interaction as user may check status at any point in process.
- A metal surface at the bottom of the change/ticket retrieval creates an auditory alert of coins clattering, cueing the user to collect them as well as their ticket, reducing post completion errors.
- All section titles numbered and consistent tone - instructions.
- Symbols next to each interaction point follow BSI (2004).
- Most limiting user dimensions - 5th percentile female eye height (upper limit), followed by 95 percentile elbow height (lower limit) - the height range we tested to be most comfortable for interaction, in which all interactive elements fit. We also used >99 percentile male square hand access for change/ticket collection to be accessible by all. (Peebles and Norris, 1998)
- Body of machine bright retro-reflective blue - high conspicuity and associated with parking.
- Testing led to titles 1-3 sequentially drop in height rather than being level - better eyeline flow.
- Minimum interaction: select time (1 button), insert coins, confirm (1 button), collect change/ticket.

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