CS-349 Coursework Two

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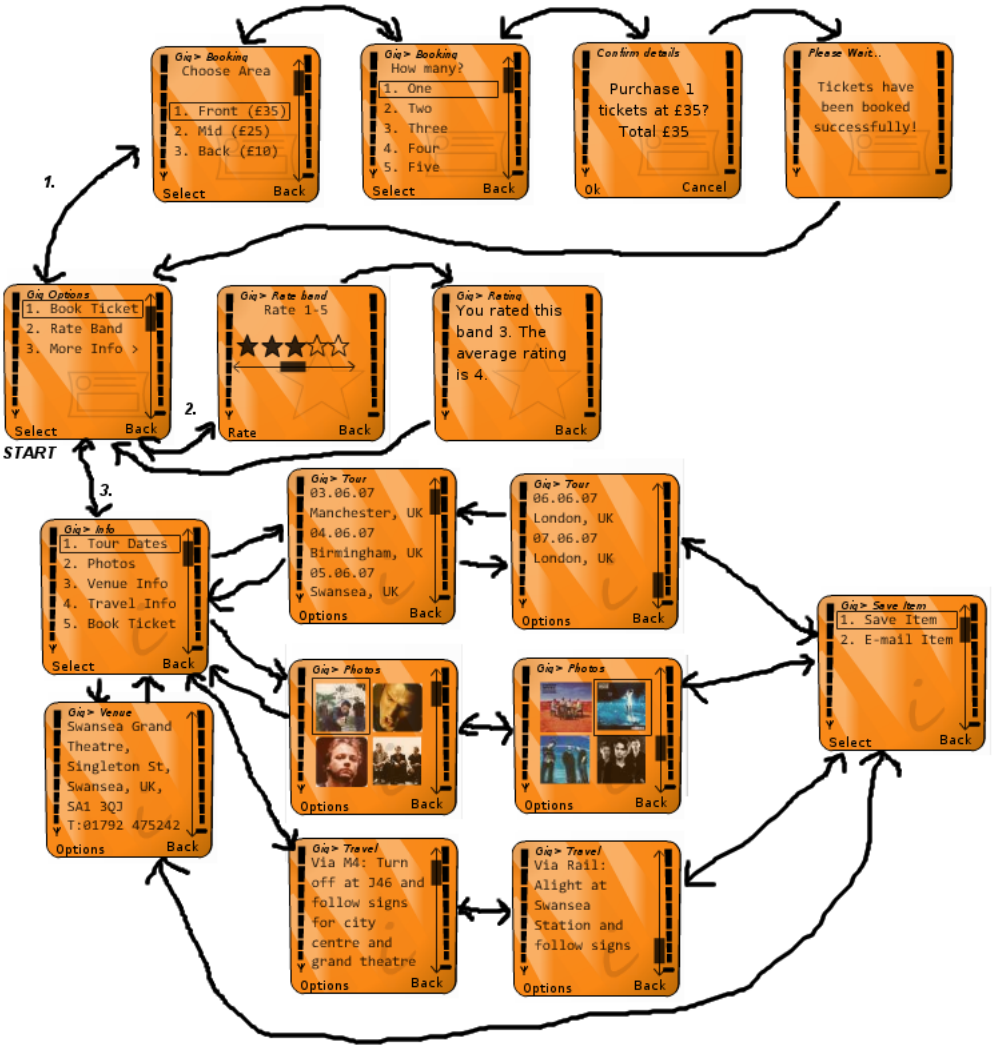
Typical User Experience



The above diagram demonstrates the typical usage pattern of the system.

The user is presented with an initial root menu containing 3 options:

1. Book Ticket
2. Rate Band
3. More Info

Booking a ticket is a linear process whereby the user supplies two pieces of information: the seating area and number of tickets desired. When the user has selected appropriate values, they are asked to confirm the details before the system processes the booking and gives the user feedback on the status i.e. success or failure. After this, the user is returned to the root menu.

Selecting the band rating option displays a screen where a user may select a rating between 1 and 5 stars. Once the rating has been cast, the average rating is updated and reported back to the user. Any return to this menu option will simply reiterate the user's rating and the average (without the opportunity to rate again).

The final root menu option yields more information about the gig.

1. Tour Dates
2. Photos
3. Venue Info
4. Travel Info
5. Book Ticket

The first 4 options take the user to the appropriate data and each gives the option of saving the data item currently selected or e-mailing it to a friend. The fifth option simply takes the user to the main booking function.

Encorporating Norman & Schneiderman's Guidelines

Norman's Principles

- *"Ensure a high degree of **visibility** - allow the user to work out the current state of the system and the range of actions possible."*

  Each screen shows a descriptive title, depicting the section of menu structure in which the user currently is i.e. "Gig - Book Ticket". Also, scrollbars indicate whether there is any further information on the current section. A further visual cue is provided by icons for each of the three sections: a ticket icon for the booking section, a star icon for the rating section and and "i" icon for the information section. These icons provide a subtle clue as to which part of the system is currently in use.

- *"Provide **feedback** - give continuous, clear information about the results of actions."*

After a transaction has been completed, a user is told expressily whether it succeeded or failed i.e. booking a ticket, rating the band etc.

- *"Present a **good conceptual model** - allow the user to build up a true picture of the way the system holds together, the relationships between its different parts and how to move from one state to the next."*

  In terms of a conceptual mapping, a hierarchical menu structure has been used where each option has a corresponding number. Each menu has a maximum of five options, so there is little possibility of a user becoming lost in the structure.

- *"Offer **good mappings** - aim for clear, natural relationships between actions the user performs and the results they achieve."*

  Menu navigation occurs through a set of arrow keys and a pair of yes/no buttons. The screen updates the value of the yes/no buttons on each side as can be seen in the diagram. Pressing the button with "Select" labelling it takes the user to the currently highlighted option. Pressing the "Back" or "Cancel" labelled button returns them to the previous screen. This simple navigation method provides a user with an intuitive mapping - movement between options is visually obvious via arrow direction and selecting an option is a matter of saying "yes" or "no".

Schneiderman's Golden rules

- *"Strive for consistency"*

  Each menu uses the same numbered format, scrollbar and control system of arrow keys and yes/no style responses. The "yes" response is always on the left and the "no" response is always on the right. Backtracking a menu traversal returns to the previous menu with the relevant option highlighted in order to give a consistent traversal experience.

- *"Enable frequent users to use shortcuts"*

  Pressing the number keys, rather than arrow and yes/no selection, selects and enters into that particular item. Frequent users know that pressing 1, 1, 5 and "yes" will order them five front-area tickets, for example.

- *"Offer informative feedback"*

  A user is notified if their ticket transaction has failed or succeeded (and why not, if it hasn't).

- *"Design dialogs to yield closure"*

  Each menu transaction is designed to have beginning, middle and end. Beginning a ticket booking involves the user selecting the option, supplying further information, confirming details and then being given the transaction response message and returned to the menu. The same holds for the band rating option and the further information options, all of which may be saved or e-mailed[1].

[1] The save/e-mail dialogs haven't actually been implemented by the system since these would be specific elements of the mobile phone's API and thus not strictly relevant to this simulation.

- *"Strive to prevent errors and help a user to recover quickly"*

  The main area for concern with respect to errors is the ticket booking. If a user specifies the wrong quantity or ticket area then they may end up spending more money than they intended or receiving the wrong tickets. For this reason, the transaction requires an explicit confirmation to be given. Other errors are unlikely to appear in this simulation due to the limited number of options and lack of complex programming.

- *"Allow 'undo'"*

  Almost every screen in this system has a "back" button which the user can press in order to return to the previous menu.

- *"Make users feel they are in control of a responsive system"*

  Each menu loads as quickly as possible (typically a fraction of a second - fairly instantaneously) apart from the section of ticket booking which contacts the central service. At this point an artificial delay is put in place, although it does inform the user that the transaction is processing and asks politely "Please wait".

- *"Reduce short-term memory load"*

  Each traversal of the menu is a maximum of 3 items long and the current section title is shown clearly on each menu screen so as to remind a user of the current section's function and thus make sense of the available options. The use of visual section icons in addition to textual descriptions is a further aid to a user's short term memory as viewing a menu page is enough to discern the current state of use.

Influences On Design Choices

Further influences on the design of the system came from the Mobile Interaction Design book and the Nokia mobile menu system:

- Navigation occurs through a simple arrow based navigation system with options avilable to be accepted or declined with clearly marked button options. This simple system seems flexible as well as intuitive.
- Sounds are played back to indicate key presses and menu changes. This gives an extra cue to the user that state has changed.
- The menus will loop and, when they do, the scrollbar reflects that the selection has returned to the top/bottom.
- Each screen avoids showing a single option at a time and shows between 2 and 5 options for each.
- The menu hierarchy was kept as simple and logical as possible in the hope to match the user's intuition.
- Photos and other data items were easily saveable and shareable with other users via e-mail (there is potential for Bluetooth and MMS, if the user saves the image first).

Prototype Evaluation

Usability is a subtle science which must pander to the manner in which users are likely to want to use a mobile device. Avoiding complexity is an important issue, although this can become a trade-off against functionality and customisability. A device must be somewhat adaptable to the manner in which a frequent user wishes to deal with it but must not confuse a new user. The key to usability, then, is to provide a simple, small structure of well-defined and reinforced concepts which explicitly inform the user of what's happening, what they can do to change what's happening and what has recently happened. This must be accessible via a well-afforded, tactile, aesthetically pleasing, unintrusive interface which provides meaningful feedback in a succint manner. It must be quick, simple and accessible.

In practice, this means paying attention to laying out menu hierarchies in a way which can be easily navigated without users becoming lost or overloaded with information. The number of options should be small but not singular. A minimum of two choices should almost always be available on a screen. Navigating a menu, like navigating a road system, requires clear signposts and an ability to backtrack. Influencing the system should be an intuitive experience and should always provide feedback and the feedback should be highly responsive and reflect the new state in which the system is now in.

When dealing with a small screen size, representing medium and large size datasets can prove problematic. Scrolling is the main method used here in order to provide access to the information which would not fit onto a single screen. With key input, it is important to highlight the currently selected option clearly so that the user is aware of what will happen next time they press a key.

This prototype system would help develop a commercial application because it allows testers to get a feel for the functionality and purpose of the gig RFID system and how using this would affect their daily lives (and hopefully improve their quality of life). The menu system and overall navigation principles are heavily rooted in Nokia's menu system, therefore many changes would need to be made in order to implement this system on a mobile phone whose navigation system differed vastly. Other systems may use different method of representing large amount of information, such as zooming interfaces. Despite implementation specific difficulties, the overall impact of the service and its features can be weighed up with this prototype and the usefulness (as well as the usability) can be gauged by an interested commercial developer.