



Mobile Usability

White Paper

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User Vision Limited – Focusing on the user experience

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1. Executive Summary

This White Paper report was compiled by usability consultancy User Vision, based on a research study which set out to examine, in detail, the usability of mobile phone handsets. The aim of the research was to identify examples of best practice in handset and application design and to recommend areas for improvement.

The research took the form of a comparative usability evaluation of four of the latest handsets from Orange, Nokia, Samsung and Sony Ericsson, all of a similar specification and all running on the Orange network for consistency. The study focused on both product design and applications from the end user perspective; and was conducted using nine test subjects who had a minimum three years experience using a mobile, and had neither used or owned any of the test phones. A within-subjects design was employed where the subjects were asked to perform three tasks on each of the four mobile phones for which the order of presentation was randomized. The tasks were as follows:

- **Task 1:** Sending a text message to a specified name in the Phone Book.
- **Task 2:** Changing the phone's current ring tone.
- **Task 3:** Accessing today's news from the BBC website.

The evaluation was conducted at the User Vision facility during October 2005. The nine subjects were asked to perform each of the tasks on each of the following four mobile phones:

- **Orange SPV E200**
- **Nokia 6630**
- **Samsung D500**
- **Sony Ericsson S700i**

The methodology employed was as follows:

- **Post-task questionnaire** – completed after each task
- **Post-phone questionnaire** – completed after each individual phone test
- **Post-test questionnaire** – completed after testing all four phones (to provide a comparison between the phones tested)

In a separate but related piece of research we surveyed 144 people about the factors that are most important to them when choosing a phone. The sample was made up of the nine subjects which took part in the user-test study and a further 135 respondents selected from User Vision's database. The full results of this research study are also included in this report.

Objectives

The overall objective of the study was to gather empirical qualitative and quantitative evidence of the ability of users to complete common tasks using a range of handsets, and to identify any difficulties encountered.

The aims of the study were therefore as follows:

- To compare and contrast four mobile phone handsets in terms of both application and product design
- To evaluate the extent to which they succeeded in attempting each task, and the problems encountered
- To examine the extent to which users were dissatisfied or satisfied with the overall experience, providing ratings for each handset
- To investigate users' attitudes towards the perceived importance of a range of phone attributes
- To generate a series of usability recommendations for the design of mobile phone handsets.



Figures 1 and 2: Mobile Usability Testing at User Vision

2. Findings

This section details the study findings for each of the handsets in turn.

3.1 Orange SPV E200

Usability Findings

General

- The home key is an excellent feature because it acts as a shortcut (escape) out of a complicated interface. Occasionally, subjects thought the home icon might represent the homepage of a web page. Many subjects expected the red hang-up button would take them back to the home screen.
- Subjects often found the use of the directional and select joystick to be awkward and cumbersome, particularly when moving left, right, up or down. Carrying out the 'select' action was particularly frustrating and difficult because they needed to press the joystick downwards, often mistakenly pressing in another direction as a result. Occasionally the joystick was mistakenly perceived to be a select button rather than a 4 directional joystick.
- The icons at the bottom of the display were generally regarded as too small to be clear, with subjects often struggling to navigate to them even though they felt it must be possible to get there. When highlighted by the orange square, users often did not recognise that the relevant icon had been highlighted.



- Not all subjects were able to relate the 'start' label as referring to the 'Menu'. Some subjects thought that there were only five main sections on the phone; those shown at the top of the home screen. Although subjects suspected that the horizontal icons were selectable, they were often unable to negotiate the joystick to get to the selectable options below the icons across the top of the screen.
- The default timer for the backlight was felt to time-out too quickly (between 10 and 15 seconds).

Task 1: Sending a text message.

- Subjects were often unsure how to use/navigate to the bottom half of the screen to begin creating/typing a text message. Although an 'Inbox' option is available from the Start menu, all subjects felt that it was inappropriate to have the inbox as the primary option for text messages (and is contrary to their experience). The overall conclusion was that it was illogical to go to the inbox to create a new message.
- The difficulties in using the joystick meant that subjects rarely succeeded in selecting the options underneath the icons. The text message task would have benefited from user's ability to access the 'Write new message' option underneath the message icon on the display. Selecting the message icon itself took the subject to the inbox (not desirable).
- When editing or creating a text message it was not immediately clear how to delete a character. The return button was often not identified as the delete button because it is a 'go back 1 step/screen' button on other screens/sections/modes. Subjects only resorted to trying the return button in the absence of a dedicated cancel ('C') button.

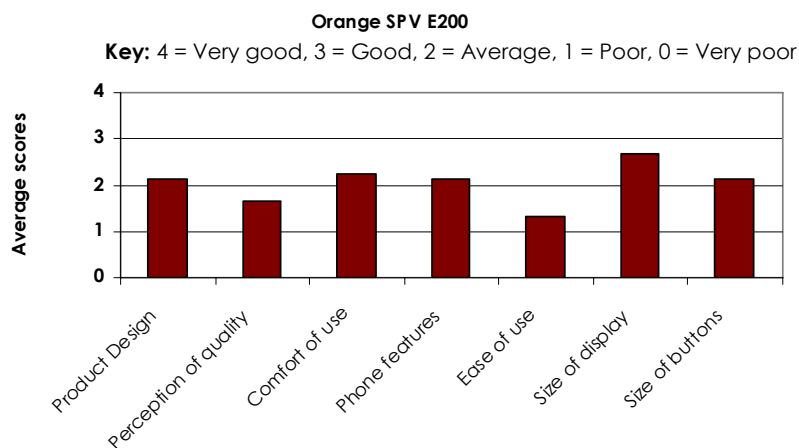
Task 2: Changing the current ring tone.

- Showing the ring tone name on the home screen (underneath the Settings icon) is good feedback especially for letting users know that they have changed the ring tone or for letting them know the name of the current ring tone in use.
- There appeared to be no obvious method of previewing ring tones prior to changing them, which wasn't regarded as favourable to the majority of subjects.

Task 3: Accessing today's news from the BBC website.

- Subjects were all familiar with the internet Explorer icon – therefore making it easier to access the web feature.
- Users were able to access the 'Address bar' option to enter or specify their own URL. This option is available by pressing the 'Menu' button (soft key) at the bottom right of the internet Explorer screen. The use of the label 'Menu' for the right hand side soft key was not clear or obvious for indicating access to sub-menus. Subjects thought it would be clearer if the label was, for example, 'options'.
- Subjects did not feel confident when disconnecting from the internet because there was no clear option to 'disconnect'. Users can disconnect by pressing the red hang-up button, which will return them to the home screen of the phone. However, there was no feedback upon pressing the hang-up button therefore subjects were not confident that they had disconnected.

Ratings per Phone Attribute



Despite good ratings in terms of size of display and buttons the ease of use rating was relatively low. The main reasons for this were the erratic behaviour of the joystick and the design of the application. In the time permitted during the testing subjects did not work out the shortcuts available. Overall, the mean scores were relatively low. One surprising result is the low 'perception of quality'. The fit and finish of the phone was good however, and the joystick use may have impacted the subjects' perception overall.

3.2 Nokia 6630

Usability Findings

General

- Subjects had great difficulty identifying how to access the menu for the phone. The relevant Menu button is unclear due to the unintuitive icon which suggests synchronization or connectivity more so than meaning 'menu'. Subjects' inability to identify the menu access key affected their perception of the phone from the outset – because they could not obviously locate the menu.
- The audible click upon pressing the joypad is good feedback and gave confidence to subjects that they had actually pressed the key.
- When navigating the Grid style menu, the graphical icons for each section were shown with the text label below the icon. The combination of showing icons with text labels was better than showing icons alone.
- The 6630 is significantly different to the non-smart phone Nokia's, therefore the learning curve was slightly higher than expected. Stumbling upon the menu, subjects felt that there were possibly too many options. Many of the features were unfamiliar, and most subjects felt that they probably would not use many of the advanced features available.
- The horizontal tab style for navigating sub-menus is a good feature as it allows users to traverse across second level peer options without navigating away from the current screen.



Task 1: Sending a text message.

- The Pencil icon button was often misunderstood, with some thinking that it would take them to the text message facility. Within the text message facility, some thought that the Pencil button would take them to the 'symbols' menu.
- The 'Create a text message' screen was unfamiliar to subjects. It presents the 'To' entry field above the message entry field, on the same screen. This method of asking users for the recipient details along with the message was mostly unfamiliar to subjects as many participants were used to selecting the recipient after composing the message. To navigate the phone the Nokia uses a joy pad which has a concave indent for the thumb that can be pressed to select a highlighted item, or pushed to any of the four directions to navigate. Often users struggled to grasp that they needed to move down (press down on the joy pad) in order to edit/create a message.
- When editing/creating a text message or when entering a URL address within the browser, subjects were often confused and not confident when it came to deleting a character or entering numbers and symbols, e.g. commas (,), forwards slash (/), etc. Between the 'C' (cancel) button and the 'hang-up' button users did not know and were not confident which of the two keys to press.
- Searching through the contacts list was confusing. For example, when searching for Joe Smith under 'J', subjects are not sure if they are being shown a list of the surnames or first names beginning with 'J'. Although subjects search by first name the contact list returned is displayed in the format of "surname first name" (there is no comma in between).
- Although the soft key shortcuts are useful, those presented during testing (contacts and calendar) were not the most useful for the tasks required in the evaluation. However, when subjects could not locate the menu button, for sending a text message (first task) they went through the contacts list, found the entry for Joe Smith and were able to send him a text through that method.

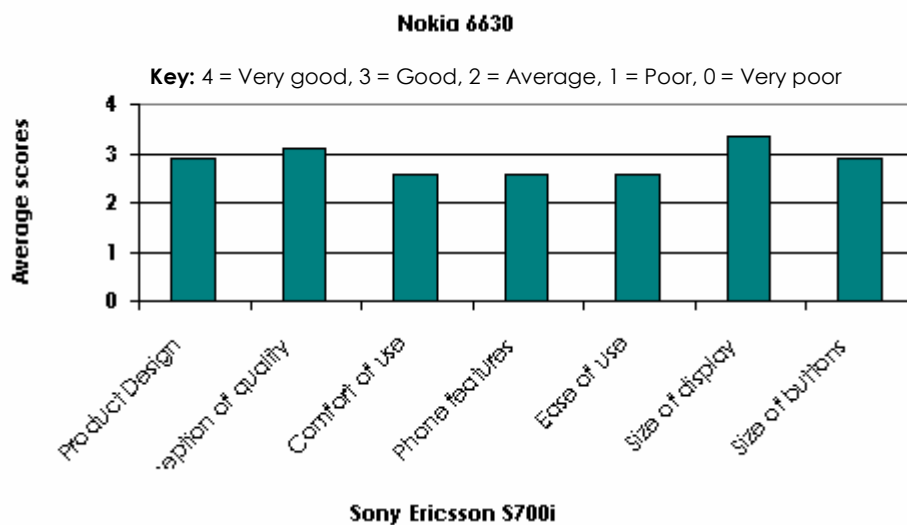
Task 2: Changing the phone's current ring tone.

- To change the ring tone, users can do so via the 'Profiles' feature/option. However, many of the subjects were not able to grasp that they need to 'edit a profile' in order to change the ring tone.
- The concept of editing and customising profiles for the ring tones task was unfamiliar and usually not understood. Another way of changing/accessing the ring tones feature is through the File Manager. Locating the 'sounds' option in the File Manager folder was confusing to the subjects. It was expected that this would have been located in the 'settings' menu option.

Task 3: Accessing today's news from the BBC website.

- The option to enter a URL is not shown upfront and subjects did not like being taken to the service provider's content page first. Subjects expressed that they would like to see the address bar first.
- The icon on the internet button was not obvious to subjects. Subjects felt that it would be more representative of the action to 'synchronise' rather than to access the internet.

Ratings per Phone Attribute



Both the 'comfort of use' and the 'ease of use' ratings were low relative to the other metrics. However, the ease of use rating was still higher than both the SPV and the Sony Ericsson.

The phone features score was also relatively low. It should be pointed out this question was difficult to answer from the users perspective as they did not use many of the features on the phone. They therefore could not build up an accurate appreciation of all of the features.

3.3 Sony Ericsson S700i

Usability Findings

General

- Some subjects thought that the swivel action was gimmicky. Subjects did not know how to reveal the number pad at first; some thought the phone might be a clamshell style phone.
- The label 'More' is used to indicate that there are further sub-sections within the current section. Some subjects did not think the 'More' label was obvious enough for indicating the availability of further subsections.
- The central button on the joy pad was not obvious as being the 'menu' button, nor was it obvious that users can use it to 'select' an option (in the absence of the 'select' soft key). One subject thought the button was a joystick (even before they used the Orange SPV E200 phone).
- When navigating the icon menu system, an associated text label was presented at the top of the screen. The associated text label at the top of the screen was not always noticed. In that instance, subjects felt that it was more helpful to present the menu options in text format because the icons were not familiar or easy to identify.

