1. Bad User Design: **Sony Cybershot DSC-P71 3.2 Megapixels Digital Camera**

**The Device:**
It is an entry-level, 3.2 Megapixel digital camera, with 3xOptical and 6xDigital zoom. Available features include:
- Wide range of white balance modes (Auto, Daylight, Cloudy, Fluorescent, Incandescent)
- Three area multi-point Auto Focus (fully automatic, no option to select AF point)
- New scene modes (twilight, twilight & portrait, landscape)
- New noise reduction algorithm (based on that first implemented on the F707, but improved)
- Multi-Pattern metering
- Resolution: 2048 x 1360 (3:2), 1600 x 1200, 1280 x 960, 640 x 480
- Multi-burst continuous mode (16 frames on a single JPEG - 30 / 15 / 8 fps)
- MPEG HQX movie (320 x 240 unlimited @ 8 fps - 5 mins 55 sec on a 128 MB MS, no audio)
- 2 x AA batteries - rechargeable NiMH and charger included
- 16 MB Memory Stick now standard

**Why is the design bad?**
1. Many of the features I was not aware of. They are hidden somewhere in a setup menu. And I am sure I paid for them.
2. Small LCD makes it hard to read them from the menu.
3. Icons around the controller (on the back of the camera) are not clear. Besides the commonly used "lighting" sign for the flash and the timer one the test is not easily understandable. I haven’t used any of them.
4. Controller is very, very hard to use. To accept your choice you need to press the center point. And it has to be very precise push. Otherwise you will move around between top, bottom, and left of right. Since the controller is shaped like a “u” it takes at least 6-7 trails before I manage to make a selection (i.e. delete unwanted photo)

5. I still haven figured out the difference between SCN and regular photo function. The pictured taken both ways look the same.

6. It looks like a microphone – but it isn’t. I was sure it was. When I was viewing recording and there was no sound I thought it was my fault (very typical for the users of bad designs). I want through the manual but I could not find anything. I went online- just to find out this model does not have any audio.

7. I don’t know what it is and why it is there. Is it important? Should I worry about it?

8. Zoom buttons are on the back of the camera, but the descriptions are on the top.

9. LCD is that it doesn't have a protective window (you can touch the LCD and make it 'run'). So be very careful, which is quite hard to do since the camera does not come with the case.

Improvements:
1. People who buy entry level cameras do not expect a whole lot of features. They just want to take pictures. Some essential features like zoom or picture resolution should be kept. Others, too difficult to understand should be removed.

2. Bigger screen would make set up of features easier.

3. Icon should be more universal.

4. The shape of the controller needs redesign. Scaling it down would make it easier to press the whole controller to make a selection. It has been use in cameras of other brands.

5. SCN too complicated (redundant) for the entry level camera. Regular photo mode is sufficient.

6. Get rid of the wholes or make an audio function available.

7. Unless it is important it should not be there. If it is it should be explained in an easy way.

8. Pictures should be placed right under the controller.

9. LCD is a very fragile screen. It should definitely have a protective window.

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2. User Friendly Design: Nokia 8890 Mobile Phone

The device:
It is the world wide phone that operates 5 different continents (Europe, Africa, Asia, Australia and the Americas) and over 120 countries throughout the world. It is a dual band phone, operating in both the GSM900 and GSM1900 networks. Depending on your overseas provider, they may not even utilize the 3rd frequency, which is 1800 MHz. The Nokia 8890 has an infrared link for wireless communication with a compatible Nokia phone or a compatible PC or printer and it can be connected with a compatible PC via its integrated infrared port. With PC Suite you can write text messages or manage your phone's memory using a compatible PC. You can add, delete and copy names and phone numbers in PC Suite and then transfer the revised data to your phone via the infrared port. The setup software allows easy installation on a compatible PC running Windows 95/98. It is very small and light (91 g, made out of light aluminum).
Why the design work:
Nokia 8890 is a very small device (100 x 44 x 18 mm, 3.9 x 1.7 x 0.7 in). But after just few minutes of using it there is no doubt that designers were able to achieve all that is possible within such a small space to make the phone extremely usable and very efficient.

1. The display, because of the phone measurements, is quite small. It allows up to 5 lines of text. Nevertheless, it is illuminated in high-contrast, so it has an ability to display full color graphics. Scrolling text is very easy, so the limitation of 5 lines is not a problem. The full screen is visible at all time (whether the sliding cover is over the keys or not)
2. Nokia has a built-in real-time clock that lets the user know what the correct time of your location is by checking it with the current network.
3. The number of key is limited to the standard minimum. The number buttons are separated from the function buttons. There are 4 function buttons and a scroll button. Red and green head phone - used in all the mobile phones, two select buttons right under the display, for and easy selection. Scroll button is located in the very center.
4. The main screen always has a phone book option (left key press). The user is able to access the phone numbers and make a phone call fast and easy.
5. The high-output blue/white LEDs produce strong light to illuminate the keys on this phone in the dark. It is very easy to read them.
6. The user is able to personalize the way to answer the phone: by sliding the cover down, by sliding the cover down and pressing any key (or just the green head phone), or with the cover closed.
7. Keyboard has an autolock function that can also be personalized (the time after which the keys will be locked). It resolves the problems of phone calls made unintentionally when the phone is in user purse or pocket.
3. EIGHT GOLDEN RULES OF USER INTERFACE DESIGN

Nokia 8890 Mobile Phone

1. Strive for consistency.

All Nokia phones are very consistent. I have been a Nokia user for over 7 years. And will probably stay faithfull as long as I am a cell phone user. All of the phones I used have the same menu structure. And although Nokia implements new available technology, the structure of the main menu stays the same, only new functions are being added to already existing menu. (See appendix: 'Nokia menu structure').

Another thing that is very consistent is the icons. The look is being updated regularly, but overall design stays very close to the original.

The four function buttons are very consistent in most of the Nokia models. There are two buttons that are placed right under the screen to make a selection and there is also a green (accept or make phone call) and a red (cancel, abort) head phone buttons.

2. Enable frequent users to use shortcuts

Many shortcuts are available for the users in Nokia 8890. Apart from quick dial button function (numeric buttons 1 through 9) there is a feature of voice dialing (user can program 1-8 numbers).

In the message option shortcuts are available in both text and image messaging. User is presented with a choice of already written messages. These are the messages that are mostly used (i.e. "will be done at..." or "pick me up at...".), User can personalize the messages or add his own to the list. There are already default pictures in the picture messaging function. If the user wants to tell someone "I love you" he is able to send the picture of a heart. All images are replaceable.

3. Offer informative feedback

User is provided with constant feedback. For example: when sending the message the text "your message is being sent" is displayed, when the message is sent "your message has been sent". There is also additional option available to the user – he can it set up to receive the reports when message is sent, when message is delivered and viewed.

After each time the user changes the setting the screen informs him that setting has been change. When user changes the ring profile the small icon is displayed in the corner of the screen (whether the ring is on loud or muted).

Two other icons (very important) are visible to the user at all time. The first is the icon of the strength of the network; the second is the level of the battery. When level of the battery reaches low, user is prompt about it by an alert (which can be customized or turned off).

4. Design dialogs to yield closure

Nokia menu structure: items that related to each other are grouped together. It is easy for the user the item of the menu he is looking for.

For example if he wants to send a message he goes to Messages – then Write Message – then he writes the message - he presses sent message – he can either input the number manually or pick it from the phone book – accepts – sends message.

Also the numeric keys are grouped together and they are separated from the function (soft) keys.
Numeric keys are designed as a regular phone plate. Good mapping.

5. Offer error prevention and simple error handling

Error prevention is offered in inputting the phone number while sending the message. User can pick the number from his phone book.

Each text message is limited to 160 characters; this number is being displayed in the corner of the screen. Each time the user inputs the characters the number decreases.

The phone has many prompt screens (not too many). Before sending the message user is prompt: “sent message to…”. He is given an option to accept or cancel. When the message could not be sent user is notified about it. Also when the message user sent has not been picked up by the recipient for certain amount of time, the report is sent to the user informing him about it.

Navigation keys always allow user to go one step back. So when he makes a wrong selection he does not have to start from the beginning.

6. Permit easy reversal of actions.

Reversal of the user’s action is very easy with Nokia. Before executing an action user is given a choice to cancel or accept.

While writing the text message user can delete either one letter or whole message (start over). Every time the user presses the red headphone button, phone comes back to the initial screen.

7. Support internal locus of control.

There are no wizard modes in this phone. User has an easy access to the functions since the menu has a very well organized hierarchy. Also at any point user can come back to the initial state of the phone by pressing the red headphone button.

8. Reduce short-term memory load

Executing each action never takes more than 5 sub actions. I am not sure how important ‘seven plus or minus two’ rule is in this case since all functionality is so easily accessible (because of good structure of menu, clear and labeled icons). The actions user is allowed to take at present time are always visible on the screen. So there is hardly any short-term memory load. All the user has to remember is to press the button to make a selection.
Challenges IA vs. GUI:

Challenges that IA designers have to face can be divided in three main categories:
- small display space,
- limitation of controls,
- difficulty in determining target users.

Small display space is one of the major limitations in IA design. GUIs usually allow the designer to work within a large space (e.g. computer screen). All the options and modes can be easily view and accessed by the user. IA user needs to scroll or flip through to view the available options. It may result in omission of the feature user is seeking for (frustration). Another problem is that a user may not be aware of all the possible choices (actions) he has. Therefore may not use the full abilities of the device. Good grouping of similar options (proximity) will make it easy for the user to find a desired option.

Small display means limited information on the screen. The way the alerts, prompts or validation should be displayed in a very careful way, allowing a user to take a desired action without a confusion or stress. Therefore it is very important in AI design to focus on error prevention as well as instant feedback. If error occurs user should be informed what happened and what is the way out.

GUIs contain a variety of controls. Buttons, scroll boxes, drop down menus; they are all available for GUI designer. When it comes to IAs the controls mostly are keys, buttons, and knobs. The knowledge of human factors is crucial in designing controls for IAs. They need to be easily understandable, provide user with the feedback and should allow user to use them effortlessly in a variety of conditions. It is far more difficult and more complex to predict where and how the user will use a cell phone (level of noise, weather) than graphic software for the PC (home or office, at the desk).

Users of IAs are driven by different factors than users of GUIs. Designers of the software can do the research and easily determine who their target users will be. GUIs user usually acquire the product after determining their needs and researching available software. This fact allows the designer to better target the user (since they know their needs) and customize the software. IAs design presents a lot more challenges. Users are not only interested in the functionality of the device. Very often purchase is made based on the appearance. So the IA should not only be functional, but also (or even fist of all) appealing. It may be hard to achieve it since same device can be used by different kinds of users in many different ways. Same phone can be both and used by someone’s grandfather and a manager of a huge corporation. Finding what common needs and expectations 56 year old grandfather and 35 year old professional share may be a challenge IA designer would have to deal with.
Appendix:

Nokia menu structure:
SOURCE: www.nokia.com