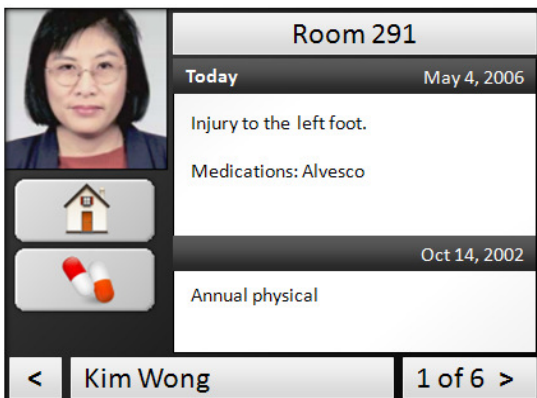


Challenge:

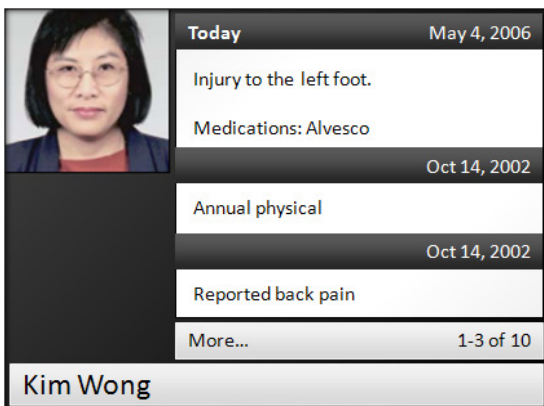
Design an application to be used in by medical staff in a small doctor's office. The application should work with the Wi-Fi network to provide patient medical records on the fly for up to 6 patients at a time. Patient's records can be recalled initially via a swipe of their HMO card. Medical staff should be able to access prescription, address, and make notes on a patient's record. The application will be run using a Blackberry device and should not require the stylus.

Solution:

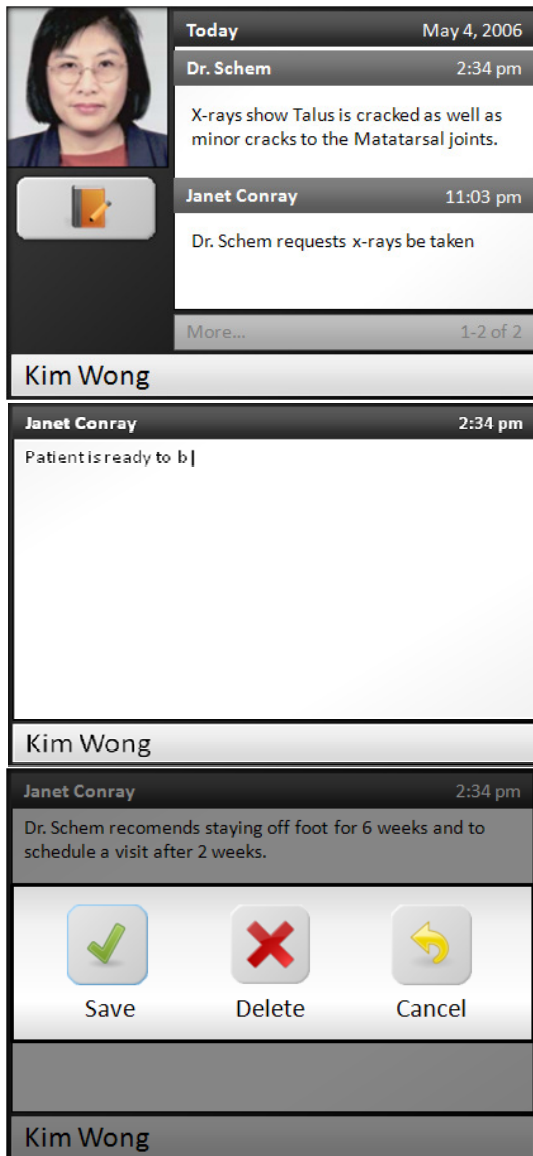
I chose to focus on the task of the medical staff personal updating a patient's condition information. In designing the overall wizard, I felt it was important for the user to be able to handle the device, particularly looking up information, with the use of only one hand. This decision was made as medical staff is rarely ever empty-handed and the office particularly chose not to use stylus with the device. To do this I designed the system around the customizable scroll wheel on the left side of the device and the definable convenience key. As the user scrolls the wheel, 'focus' changes from one button on the screen to another. To select the button, the user presses the scroll wheel into the device, On pages other than the overview, the convenience key is used to back out of a screen. This particular flow was chosen to illustrate this navigation system at different levels down to the point of data entry and saving.



Upon scanning a patient's HMO card, the medical staff is presented with an overview screen containing information such as a picture of the patient, the room number they are in, and a preview of the information entered during the patient's current visit. From the overview screen buttons allow quick access to current address information and current prescription information. Note that if a "visit" has not yet been created for this date, the user would have been taken through a separate wizard to enter initial details for the visit. In this scenario at least one other person has met with this patient.



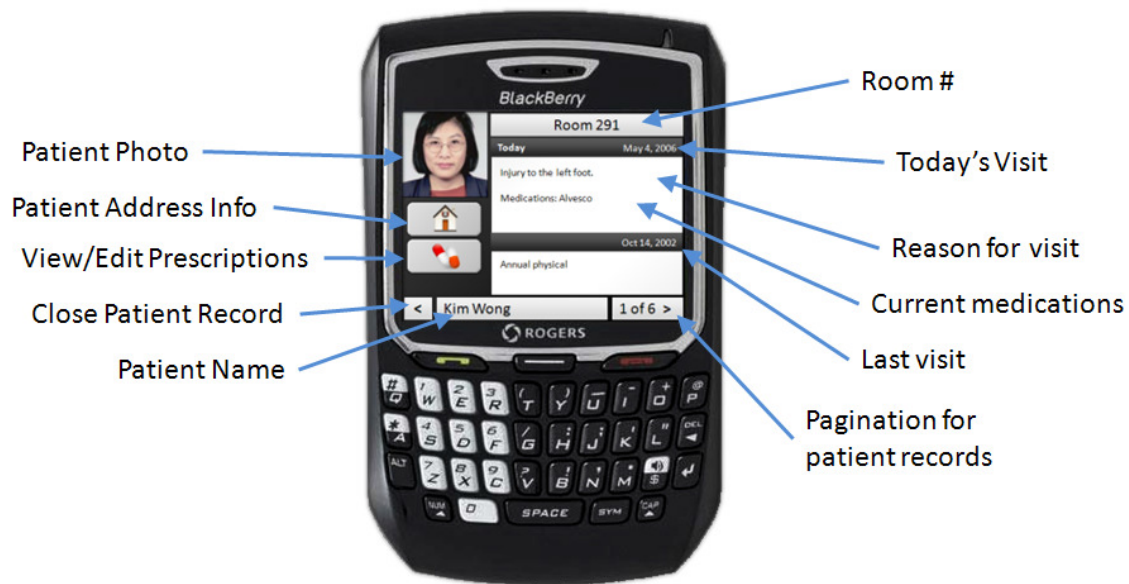
The medical staff then uses the scroll wheel to place the highlight focus on the summary information and pushes in the scroll button to click. Doing so, the summary information section expands and displays a list of all of the visits on record. By default the current visit has focus. There may be many visits on record so 4 visits at a time (ordered by most recent) are displayed with the last option in the list being 'more...'. Just like the first screen, scrolling the wheel, would change focus between those items in the list. In each visit summary, the date of the visit is shown, along with the reason for the visit. The brief description should be enough to allow the medical staff to identify other visits related to the current visit.



With the focus on the current visit, the user presses in the scroll wheel to click. The user is presented with the latest entries made thus far during the patients visit and has the same 'more...' option as they had on the previous screen to view additional entries. Each entry is preceded by the medical staff's name that made the entry. In addition to viewing the entries made thus far, a button is available to add a new entry.

When the user clicks the "add new entry" button on the left side, a text box is presented allowing the user freedom to type the information they have to add. Due to the fact that the device is not intended for heavy data entry, the entries are likely to be concise and to the point. These entries will assist the medical staff or other personal when they formally document the visit.

When finished with their entry, the user will push the convenience button on the device. When exiting a new entry, the screen displays two options, save, return to entry, or delete. By default focus will be on save and the user may. So mistakes are not made easily, pushing the convenience button at this point would take the user back to the entry. Pushing in the scroll wheel will perform the action of the button containing the focus. Both deleting the entry and saving the entry will take the user to the list of entries for that same visit. To back out to the overview page, the convenience button is pushed two more times.



Patient Overview

The patient overview is a portal window for all of the patient related activities allowing them to access the history of patient visits, get to the details of their current visit, view prescription information, and access the patients address information.

A few items on this page are primarily for the identification of the patient. At the bottom of the screen, the user will see the patient's name, is able to close that patient record, and at the bottom right can navigate to previously viewed patient records which are still in the memory. To reduce potential errors made, the patient's photo is used so the staff member does not attribute a previously accessed record to the wrong individual. The room number at the top is also noted and can be edited should the patient move rooms.

Not focused in the flow above, but also incorporated into the design are buttons on the left for the user to access address information and the ability to view or edit prescription information.

The information at the center of the screen shows the activity of the user's visits. The most current information is most pertinent, so it is displayed at the top. The dates should be positioned at the right side for scanability. Below each visit date, a short description is displayed which is entered through a wizard when a patient has a new visit.



View Visit Entries

As noted earlier, this page in the series displays a list of entries created during the patients visit. A photo of the patient is always visible along with the patient's name at the bottom. This will help medical staff as they are unlikely to remember the names of all the patients who make visits. For each entry created, the name of the medical staff person who wrote the entry is visible as well as the time the entry was made. These items are collected automatically when an entry is created so the user does not need to enter them, further reducing the amount of data entry the users must provide. Each entry is contained by a border and is highlighted when the navigation focus resides on the entry. If there are entries that don't fit on the screen, a "more..." button was added along with pagination which adds context to the entries currently displayed and sets the expectations of the user as to what to expect should the 'click' that button. The new entry button exists on the left below the picture. Buttons throughout the application are placed there for consistency. Although a label does not exist on the button, as mentioned earlier the users of this system are likely to be trained and use these tasks often enough to learn quickly and remember what the symbols mean. Their iconic imagery will assist users recall their function too. In this case a pencil on paper is a metaphor to writing a note on a piece of paper.

When first designing the application, it was necessary to recall to mind the types of users who would be using the application and create a persona. The users of this application are very smart people who have stressful jobs, and are always on the move. Medical offices from my experience are busy places and have a high throughput. One important aspect utilized in the design is the fact that these are trained professionals and who need to get the most basic tasks done as efficient as possible. The design of this application assumes that the staff would be trained on the device and that they would use the functions often. Because of this, the users would be considered advanced an icon navigation scheme would work, allowing for screen space to be less cluttered.

Such a system is a great idea and has the potential to be effective. I could easily imagine however that the demands of such a system could go far beyond the capabilities of this device with its limited viewing space and data entry keys. To make the most of the device's capabilities I took advantage of the scroll wheel and convenience button to enable one handed navigation. Medical staff that I have observed are rarely empty handed and on the move. It would be an impeding to their processes to set things down or stop to quickly pull up the record of the last patient.

In designing a system that will be used in a place where mistakes can be deadly, it was necessary to implement methods that reduced potential errors. One concern in particular was that the medical staff sees so many patients and may mistake one patient record for another when they are switching between rooms. The addition of the patient photo allows users to quickly visually identify the correct patient and literally put a face to a name. In addition the room number used to locate a patient was used. When a medical staff person needs to go back to a previous patient, they know exactly where to go.

Although I do not know for sure, I reasoned that the most common functions would be that of pulling up a patient's record and adding a piece of information to that record. To support those functions, the identification of the person was the first goal, followed by the viewing and entry of information about that person's visit. The observation page was created for the identification of a patient. The largest amount of space is dedicated to information regarding the patient's record. Once within a record, accessing a list of all visits is done with a single click. To support quick navigation to the current visit, the current visit has focus, so by effectively double clicking from the overview, the user is looking at the patient's current visit and the latest information about them. The button to add new information is there as well. While the staff member may have gone there to enter new information, I have assumed that it is likely that the user will want to read the previous entry first, however through user testing should the user be more inclined to directly enter new information, then the focus would reside on the button to add a new entry.

While some of the behavior of this application is very wizard like, this really is not a wizard. The application here provides a menu of choices to the user to select from until a linear flow is available at which point it could be considered a wizard. Within this application is agent like behavior though, such as when a card is swiped detecting if the person is already within a current visit or starting a new one, at which point the new visit wizard would begin. Other automated actions such as inserting the current user's name and time of entry creation.