



## Visual Dashboard and Heads-up Display of Patient Conditions: Assesment Volume (Version 6)

Jihoon Kang, Sayoko Yoshida, Anthony Ina, PIIM, The New School

Last Update: August 6, 2012

### **THE NEW SCHOOL**

**PARSONS INSTITUTE  
FOR INFORMATION MAPPING**

68 5th Avenue  
Room 200  
New York, NY 10011

T: 212 229 6825  
F: 212 414 4031  
<http://piim.newschool.edu>

Visual Dashboard and Heads-up Display of Patient Conditions:  
Assessment Volume  
Jihoon Kang, Sayoko Yoshida, Anthony Ina, PIIM, The New School  
*Last Update:* August 6, 2012

68 5th Avenue  
Room 200  
New York, NY 10011  
T: 212 229 6825  
F: 212 414 4031  
<http://piim.newschool.edu>

## **INTRODUCTION**

This is the Assessment Volume for the Visual Dashboard and Heads-Up Display of Patient Conditions. The purpose of this document is to provide a full list of comments and requests gathered from each design review session. This document also incorporates the results/follow-ups in regards to each comment/request. The two lists are intended to clearly communicate changes requested by both stakeholders and PIIM staffs, and track each change applied during the revision process to ensure compliance in final deliverable prototypes ultimately. This document will be updated over each quarterly deliverable, but stands as a statement of current understandings. As this is the second quarterly release, focus has been on the modules within Patient Portal: Homepage, Messages, Appointments, Immunization, and Vital Signs.

The Visual Dashboard and Heads-Up Display of Patient Conditions is a prototype Internet application. It will be implemented in the Adobe Flash environment based on requirements gathered from stakeholders and designs generated by Parsons Institute for Information Mapping (PIIM). Functionally, the application is partitioned into modules, or “Portals,” based on user group, with an additional module for login. Within each module, related functionality is grouped into “widgets” such that a portal can be configurable and customizable.

**ASSESSMENTS**

ID	PORTAL / MODULE	COMMENTS / REQUESTS	STATUS / RESULTS	REVIEW ER	WISH LIST
<b>I</b>	<b>Patient Portal</b>				
<b>1.1</b>	Homepage				
<b>1.1.1</b>		The widgets view should be simple and self-explanatory enough that sixth graders can understand.	PIIM will keep this in mind as we design final versions of each module's widget.	NNMC	
<b>1.1.2</b>		The button view should be the default homepage.	This is already the case; we will be sure to explicitly state this in the project GUI documentation.	NNMC	
<b>1.1.3</b>		In Wednesday GUI Design Review, Sean requests a different display for the medication fulfillment in the Medications widget (these are the little white boxes). Sean also requests the alert font "Your renewal request..." be made more legible. Sean also suggested the ability to collapse widgets.	PIIM eliminated the white square, added some brightness to the "renewal request" text. PIIM has added the ability to collapse widgets.	TATRC	
<b>1.1.4</b>		In conversation with Carol Smyth, Medical Director, PIIM, a decision was reached to add "time out" functionality.	PIIM designed the user interface. After 10 minutes of inactivity, the patient receives an alert declare logout in 60 seconds. If "Continue This Session" is not clicked, the user is logged out.	PIIM	
<b>1.2</b>	Messages				
<b>1.2.1</b>		Unread messages need to be more obvious (e.g. different background color).	To make unread messages more obvious, we have applied: a darker background; bolded subjects and senders; and a	TATRC	

			new icon system that provides more differentiation between the read and unread icons.		
<b>1.2.2</b>		Investigate Microsoft Outlook and integrate best practices; it is important to note that Outlook is a stand-alone application, while our platform for TATRC2 is web.	In our research, PIIM found that nearly all web-based clients use the two-pane model and nearly all desktop email clients (including Outlook) use the three-pane model. One reason for this is possibly the lack of screen real estate in web browser window. Additionally, user familiarity with checkboxes in the web environment is both more familiar and expected than the selectable rows found in Outlook. Using checkboxes will also keep the client more “lightweight,” an important attribute of web interfaces with frequent load screens. However, PIIM has adopted a few best practices from Outlook that have been implemented. Firstly, the read/unread/replied icon system, which achieves greater distinction between read and unread by using a closed letter icon for unread and no icon for read. Secondly, the “Arrange by” options were adopted for organizing messages in ways other than “date sent.”	NNMC	
<b>1.2.3</b>		Consider and investigate a web-based email system	PIIM identified and implemented practices from	TATRC	

		Gmail and their advantages.	web clients (in particular, Gmail, Google Wave, AOL Project Phoenix, and Facebook Messages) during the initial development of messages screen. Additional research was done when researching the edits containing in this document.		
1.2.4		Change “To the attention of” to “To”.	Implemented.	NNMC	
1.2.5		Switch the order of “Subject” and “To”; pre-selected subjects auto select the route for “To”.	Implemented.	NNMC	
1.2.6		Change message text background to white for easier.	Implemented.	NNMC	
1.2.7		Allow user to change Read/Unread status of a message.	The user may now mark a single message read or unread by clicking its interaction status icon. The user can also mark multiple messages read/unread by checking them and clicking “Mark Read/Unread” in the action bar.	NNMC	
1.2.8		Add medical device request form.	Pending. PIIM need more information regarding frequently requested types of medical devices by patients, and what types of forms are being used.	NNMC	Need information from NNMC .
1.2.9		In the GUI Design Volume, page 74 and 75, the module’s search is designed to open search results in a new tab.	Having evaluated the prototyping of this interaction, PIIM changes the search to be <i>within folder</i> (e.g. Inbox, Drafts). No new tab is generated. Search term added to middle of the “select / sort”	PIIM	

			row. Error message remains the same.		
1.2.1 0		Due to design of Provider Portal, PIIM returns to Patient Portal to update for consistency.	PIIM re-designs the display of attachments so as to maximize screen space — moving the “attachment section” into a blank area screen-right.	PIIM	
1.2.1 1		In conversation with Carol Smyth, Medical Director, PIIM, a need was assessed to make security in the <i>Messages</i> module even further enhanced.	Accordingly, PIIM add a “password prompt” when entering the <i>Messages</i> module.	PIIM	
1.3	Appointments				
1.3.1		The earliest appointment starts from 6:30 and the latest appointment ends at 19:00. It was suggested, however, to make the calendar flexible and have the full range of time while centering on working-day schedule.	PIIM has changed appointments to include all 24 hours of the day and specified that the user is autoscrolls to 06:00 upon entry. Additionally, times were changed to military time.	NNMC	
1.3.2		Based on reason for visit, some information must be completed. For example, for Pap smear, the patients have to complete the form in prior to the visit.	Because requests for visit are sent via automated email, we have added descriptive text and space for attachments that appears depending on the RFV selected by the patient. We are anticipating that brief questions will most likely follow some RFVs. Again, these forms will have to be constructed on an individual basis, so we need the relevant details from NNMC. (What RFVs are possible, which RFVs have these additional requirements, and what RFV requirements are	NNMC	

			necessary). Alternatively, if NNMC feels that such a definitive list is impossible, the ability to build and customize these RFV forms may need to be addressed in the provider portal.		
<b>1.3.3</b>		The calendar should also show available slots for classes that the patients can sign up for; the patient should be able to see the number of seats remaining.	The patient may now check “show available classes” to view available classes in the week view. After the patient selects a class, the right-hand details column displays the number of seats remaining. The details column also contains a button allowing patients to reserve a seat. Classes with no seats are not shown.	NNMC	
<b>1.3.4</b>		The patient is assigned a physician after appointment confirmation. The receptionist at the healthcare provider’s front desk handles this	The automated request message will be sent to the “Front Desk,” and the confirmation message will be from the Front Desk. Also, provider names will continue to be used as the title of confirmed appointments.	NNMC	
<b>1.3.5</b>		Providers should be able to create custom reason for visit.	This functionality will be implemented in Provider Portal.	NNMC	
<b>1.3.6</b>		Patients should also be able to create custom reason for visit.	Patients can type in their custom reason for visit in the text field.	NNMC	
<b>1.3.7</b>		The session length may vary depend on reason for visit.	Implemented. The duration of session is displayed in appointment request window.	NNMC	
<b>1.3.8</b>		User can link appointments with other schedule management systems.	User can set automatic notification forwarding to his/her personal email regarding appointments and	NNMC	

			messages. The option is available under the gear menu. This functionality is part of Utility module, which will be covered in Q3.		
<b>1.3.9</b>		Display the sync status to notify user.	Notify user when new appointments or class reservations are made.	TATRC	
<b>1.3.10</b>		Remove “:” from military time display.	Implemented.	NNMC	
<b>1.3.11</b>		Add “Next Steps” column in the list view. Providers can recommend appointments and/or classes to patients.	Implemented. The “Location” column is removed to save space for the “Next Steps” column. In addition, those next steps (recommended appointments or classes) are shown in the calendar view. Patients can easily make appointments by clicking items in the list.	NNMC	
<b>1.3.12</b>		In Wednesday GUI Design Review, TATRC requests to add “web conference” as a type of visit.	PIIM add “Web Conference” under the reasons for visit list.	TATRC	
<b>1.3.13</b>		In the GUI Design Volume, each day in the monthly calendar could contain a static “label”, if there was an appointment for that day. If there were multiple appointments on the day, only one label could be displayed, and it couldn’t be selected, deleted, etc.	Now, each day in the monthly calendar can contain a list of buttons (links) representing the appointment(s) that may exist for a given date. Furthermore, they can be selected/toggled, so the user can view details on the appointment (as specified on the documentation), etc. The selection color for the appointment link is the requested background blue, and the styles for the day number and day cell’s background color were	PIIM	



			implemented as well.		
<b>1.3.1 4</b>		In the GUI Design Volume, beginning page 36, no functionality was ever spec'd for Recommended section.	Accordingly, within the prototype, If the user clicks on a recommended APPOINTMENT: the available times for that appointment are immediately shown on the calendar (without showing the "Request an Appointment" pop-up). If the user clicks on a recommended CLASS: the "Find a Class" pop-up is displayed showing the recommended class description, from where the user may view its availability.	PIIM	
<b>1.3.1 5</b>		In the GUI Design Volume, the mini-calendar shows a diamond, meant to return to TODAY, as well as the current week highlighted.	Due to time and technical constraint, we will implement the diamond in the prototype, not the highlighted week. However, we implemented a solution for the "selected day" in the mini-calendar, which is not present in the spec.	PIIM	
<b>1.4</b>	Immunizations				
<b>1.4.1</b>		Full name and descriptions for immunizations on rollover.	Implemented.	NNMC	
<b>1.4.2</b>		Group vaccinations are important. Asked Sean to supply examples of these.	Waiting on info from Sean.	PIIM	
<b>1.4.3</b>		Add "Help" icons for each immunization.	Implemented.	PIIM	
		In conversation's with Carol Smyth, Medical Director, PIIM determined that our Immunizations module as designed requires the	PIIM re-designed the module, removing the "required only" checkbox, replaced it with the View drop-down commonly found	PIIM	

		addition of significant content, for both legal and functional purchases.	in other modules. Added the “exceptions” block on the right. In List View, added the <i>Occupational Status</i> column, which relates to the vaccinations personnel are required to receive. Added the ability to click a vaccine name (e.g. Tetanus), which opens a new tab with additional information. The tab supplies a button for the <i>Vaccine Information Sheet</i> , plus a checkbox for acknowledgement.		
1.4.4		PIIM realized additional information was necessary on detailed view of vaccinations.	PIIM has augmented the table view <i>Age</i> and <i>Occupational Status</i> , which could prove useful when considering deployments. We also removed <i>Groups</i> and <i>Comments</i> , as these are no longer relevant.	PIIM	
1.5	Vital Signs				
1.5.1		Add “Temperature” to default trackers.	Implemented.	NNMC	
1.5.2		Add “Pain Scale” to the vital signs. Suggested that we add a body diagram allowing users to associate pain scale measurements with body parts.	Implemented. PIIM recommends retaining a uniform tracker UI for Vital Signs and other modules. We recommend a future pain management module be developed in the future using the standard tracker UI attached to an additional body diagram component and other TBA pain management tools. In the meantime, pain scale was added as a pre-made	NNMC	

			tracker without the body diagram, accessible through the “Add Tracker” button.		
<b>1.5.3</b>		Change “Breathing” to “Respiratory.”	Implemented.	NNMC	
<b>1.5.4</b>		BMI must be included in vital signs.	Implemented as a additional stat presented with weight.	NNMC	
<b>1.5.5</b>		Mandatory that users record a reason for change when user edits their own entry; do not allow users to delete an entry.	Implemented, but suggest adding the following change to accommodate measure deletion.	NNMC	
<b>1.5.6</b>		Allow users to access a “history” of edits for trackers.	Users can click “View History” next to any tracker to view the history of changes made to that tracker. This will allow deletions to be tracked in addition to edits.	PIIM	
<b>1.5.7</b>		Allow user to compare recorded vitals to other groups (references).	This can be accomplished through changing the graph’s reference using the reference dropdown. Any reference can potentially be listed here, but PIIM must have those references from NNMC as some point.	NNMC	
<b>1.5.8</b>		Allow gender/age group to references.	The proper references are automatically selected for the user basic on their age, gender, etc. There is no need for a 35 y.o. male to compare his vitals to the average for a 12 y.o. female. Is that a correct assumption?	NNMC	
<b>1.5.9</b>		Use multi-hue color coding (suggested red to green) instead of monochrome for reference ranges in graph view.	Implemented.	NNMC	
<b>1.5.10</b>		Add “Diastolic” to blood pressure references.	Already available. PIIM has added a screen displaying	NNMC	

			the reference dropdown list to clarify the references found in Blood Pressure.		
<b>1.5.1 1</b>		Add “Military BMI Requirements” to Weight/BMI references.	Since BMI can be converted to weight based on the patient’s height (and since BMI is a more complex concept to patients than weight), references in the weight tracker’s detail views translate BMI requirements into weight requirements.	NNMC	
<b>1.5.1 2</b>		Show reference ranges in table view; indicate whether patient is above or below ideal.	Measurement cells in the table view now contain a color-coded triangle indicating whether or not the patient is somewhat (yellow) or significantly (red) outside the “normal” range according to that tracker’s reference. Mousing over these triangles displays additional information concerning the abnormal range.	NNMC	
<b>1.5.1 3</b>		Patients and providers should be able to edit goals.	Implemented.	NNMC	
<b>1.5.1 4</b>		Add a hide/collapse function for trackers in “All.”	Collapse has been implemented. Additionally, users may “remove” trackers by clicking the “X” icon in the “All” view. Removing trackers does not delete the information; it only removes it from being displayed in “All.” Trackers can be re-added from the pre-made trackers using the “Add tracker” button.	NNMC	
<b>1.5.1 5</b>		Allow user to reorder trackers in “All.”	Implemented.	NNMC	
<b>1.5.1</b>		Enlarge the display of BMI in	Implemented.		

<b>6</b>		summary graph view.			
<b>1.5.1</b>		Change “Median BMI” to “Target BMI” for the reference in Weight tracker.	Implemented. The goal BMI appears both on the top and in the graph.	NNMC	
<b>7</b>					
<b>1.5.1</b>		Notify patients when newly vital signs entry exceeds a normal range.	Implemented. A popup window appears to recommend patients to visit Educational Resources module to learn about health.	TATRC	
<b>8</b>					
<b>1.5.1</b>		Spell out the units for height.	Implemented. The display has changed from 5’11” to 5 feet 11 inches.	NNMC	
<b>9</b>					
<b>1.5.2</b>		The user can configure units for height and weight.	The default weight unit is that of America’s. This functionality is part of Utility module, which will be covered in Q3.	NNMC	
<b>0</b>					
<b>1.5.2</b>		The user can configure time system.	The default weight unit is that of America’s. The default setting is military time.	NNMC	
<b>1</b>					
<b>1.5.2</b>		Allow patients to enter comments.	Implemented. PIIM added a text field for patients to enter their comments along with vitals records. In the summary graph view, PIIM also added a panel showing the availability of comments. There are two types of icons that indicate who has entered the comments. The comment panel can be relocated by drag and drop, like any other trackers.	NNMC	
<b>2</b>					
<b>1.5.2</b>		Add Oxygen Saturation and Body Fat Percentage to the pre-made trackers list.	Implemented.	NNMC	
<b>3</b>					
<b>1.5.2</b>		Add text field in Edit Goal window.	As the patient enters a value, the curser should automatically move to the	NNMC	
<b>4</b>					

			value.		
<b>1.5.2 5</b>		Allow user to set the deadline for goals.	Implemented. In graph view, the deadline date is indicated by a red vertical line.	NNMC	
<b>1.5.2 6</b>		Make the vertical lines (e.g., selected day and set goal) thicker and more visible.	Implemented.	TATRC	
<b>1.5.2 7</b>		Allow the user to set goals for recommended class (e.g., attend 3 classes of yoga).	PIIM consider two types of classes: educational/informational and physical. User can set goals for physical, exercise-related classes in Exercise module.	NNMC	
<b>1.5.2 8</b>		Show the count down days to the goal's deadline.	Implemented.	NNMC	
<b>1.5.2 9</b>		In the current wireframe, the default time range for the graph view is "All". It should be shorter for the interactive prototype, such as 1 week.	The request will be implemented in the interactive prototype.	TATRC	
<b>1.5.3 0</b>		Add links to Nutrition and Exercise modules. The patient should be able to access to those modules without going back to the homepage.	Already available. User can easily access to other modules from the dropdown menu next to the module title. The Vital Signs module does not include nutrition or exercise information. However, the vital signs data (e.g., weight) will be accessible from both Nutrition and Exercise module.	NNMC	
<b>1.5.3 1</b>		Make selected reference more obvious in Blood Pressure graph view.	The patient may be confused which reference is displayed in the graph. The suggestion is to fade-out non-selected graph. For example, when the reference for systolic is shown, the line graph for	NNMC	

			diastolic is faded-out.		
<b>1.5.3 2</b>		Change “View” to “Yes” for comments in list view.	Implemented.	NNMC	
<b>1.5.3 3</b>		(Reference: Design Volume, p141) PIIM has designed the provider portal such that when a user adds a new Tracker, a subsequent screen provides the option to create a goal.	PIIM has updated the Patient Module for Vital Signs to reflect this change.		
<b>1.5.3 4</b>		When design Provider view of Vital Signs, PIIM realized a more usability way to “Edit Goal.”	PIIM has updated the Patient Module for Vital Signs to reflect this change.		
<b>1.5.3 5</b>		When design Provider view of Vital Signs, PIIM realized that after a new Tracker is created, the user should have the option to create a Goal.	Redesign implemented as described.	PIIM	
<b>1.6</b>	Medical Records				
<b>1.6.1</b>		The Medical Records module integrates multiple tests, results and records from multiple providers. The goal of the module is to summarize the medical information so the patients can easily understand their health.	Implemented. The patients can view a complete documentation of all tests, results, and records from various healthcare providers.	NNMC	
<b>1.6.2</b>		The records of ER and hospitalization will be helpful for the providers to be cognizant of which patients to pay close attention to.	The new grouping logic for all medical services will improve the communication.	NNMC	
<b>1.6.3</b>		Limit patients’ access to certain clinical notes.	We need to first identify which notes patients cannot access.	NNMC	
<b>1.6.4</b>		Increase the size of tooltip window and the font size.	Implemented.	NNMC	
<b>1.6.5</b>		Allow patients to remove the Next Steps.	Implemented.	NNMC	
<b>1.6.6</b>		Beginning work on the	PIIM add Urgency	PIIM	

		PROVIDER portal, PIIM is realizing new requirements for the PATIENT portal. Accordingly, we realized that in order to report and prioritize “next steps” for the care-at-home team, we need to add a display for Urgency with the PATIENT portal.	indicators to the patient’s next steps.		
1.6.7		In conversation’s with Carol Smyth, Medical Director, PIIM determined that the Medical Records module required a “problem list,” which details the patient’s medical condition.	PIIM made the change to the interface.	PIIM	
		In conversation’s with Carol Smyth, Medical Director, PIIM determined that our sample patient’s (Isaac Goodman) <i>Next Steps</i> did not match his supposed conditions.	PIIM changed his <i>Next Step</i> to “daily at-home blood pressure checks.”		
1.7	Medications			NNMC	
1.7.1		Allow patients to set notifications for medications.	Implemented. The patients can set preferences for notifications in the User Preference. The patients can enter phone number to receive text messages.	NNMC, TATRC	
1.7.2		Show the status of medications (e.g., active or inactive).	Implemented.	NNMC	
1.7.3		Allow user to search and choose convenient pharmacy to pick up medications.	Implemented. The patients can specify the default pharmacy or add alternative pharmacy from Account Settings.	NNMC	
1.7.4		Automatic request for refills should be sent out to the last visited pharmacy. Pick up location should be the last visited pharmacy.	Implemented. The patient can specify default pharmacy in the User Preferences.	NNMC	



1.7.5		Allow patients to compare prices at different pharmacies in a particular radius.	Though this may be very useful, this may be difficult to implement because the prices may vary according to insurance plans, venues, etc. In addition, pharmacy in Navy facility is free of charge for the patients.	NNMC	
1.7.6		Some patient may have a long list of medications. Be conscious of spatial concerns.	PIIM has two recommendations for this issue: the first is to add the Status filter. By default, the system only shows active medications. The patient can also select All or Inactive. The second is to allow the patient to collapse/uncollapse medication categories.	NNMC	
1.7.7		Add images of medications in a detail view.	Implemented.	TATRC	
1.7.8		Indicate the reason for taking for the specific patient. The general usage of a medication may not match with why the patient is taking the drug.	Implemented. The reason for taking specific to the user is shown in a medication's detail view.	NNMC	
1.7.9		Inactive drugs should be written in grey to differentiate from those active ones.	Implemented.	NNMC	
1.7.10		Use abbreviations for medication names.	Implemented. In addition, a tooltip appears with the full description when the patients hovers over.	NNMC	
1.7.11		Add a column to show renewal status, such as pending or ready.		NNMC	
1.7.12		Patients should be informed for Pharmacy Alert.	Implemented. It only appears if there is any. In addition, the pharmacy alert is in different color to attract closer attention.	NNMC	

1.7.1 3		List side effects of a medication in the detail view.	Implemented. The side effects is shown in a medication’s detail view.	NNMC	
1.7.1 4		Patients should be able to specify the destination of notifications (e.g., blackberry).	Implemented. The patients can enter phone number for text message or email address in the User Preferences.	NNMC	
1.7.1 5		Indicate “High-risk” medications.	Dr. Dye suggested to remove “High-risk” medications because the patients tend to be concerned or nervous about taking those medications.	NNMC	
1.7.1 6		In the GUI Design Volume, beginning p188 (Q4), the team realized no interaction had ever been designed for the “Record Intake” function.	Accordingly, a solution was designed (to be immediately prototyped) for “Recording Intake.” Users will check the taken Medication. If BID or more, users select which dose, can then leave a comment (e.g. side effects), and Submit.	PIIM	
1.7.1 7		In the GUI Design Volume, beginning p188 (Q4), the team realized no interaction had ever been designed for the “Request Renewal” function.	Accordingly, a solution was designed (to be immediately prototyped) for “Request Renewal.” Users will click the “Request Renewal” button, where they can check medications for renewal and submit.	PIIM	
1.7.1 7		Because PIIM has begun work on the PROVIDERS portal, contact-points between Provider and Patient are becoming more apparent.	PIIM has added an Updates section of the right column of the Medication module. Items in this section will report information to the user, such as “your renewal request was approved.”	PIIM	
1.7.1 8		In the GUI Design Volume, beginning p188 (Q4), PIIM realized the previous drafted “Record Intake” interaction	Accordingly, PIIM has depreciated the “Record Intake” function, and re-designed the module such	PIIM	

		had excessive latency for a user with many medications.	that a user can now click the “dosage icon” in the Graph-view. Doing so will launch a dialogue to for “intake time” and “add comment.” The user can click elsewhere on the screen to close the dialogue, or the X-icon in the top right of the dialogue box. Special treatment afforded to the “as needed” intake condition: when the user clicks the medication’s “dose icon,” the dialogue has an additional Frequency field which the user can complete. The module then displays the appropriate number of icons in the graph view. Another change of this new design is that clicking the “dosage icon” no longer takes you the medication detail. The icon marks the dose as taken or untaken. To navigate to the medication detail, the user can click the medication name, shown left as the label of the row. PIIM has updated the styling to reflect this change, also.		
<b>1.7.19</b>		Confusion existed as to which medications had been taken, which had not in the Graph-view of Medications.	PIIM added the red outline to “not taken” medications, and update the legend below.	TATRC , PIIM	
<b>1.7.20</b>		When adding a Medication, PIIM realized the form was missing Frequency (including “as needed”).	PIIM made the change as described.	PIIM	

<b>1.7.2 1</b>		PIIM realized there was ongoing confusion with the various icons in the medications module, both for Patients and Providers.	Accordingly, PIIM subsequently changed to two icons types. One for scheduled medications, another for “as needed” medications.	PIIM	
<b>1.7.2 2</b>		PIIM became aware no way of reporting an overdose existed for “fixed” prescriptions.	PIIM added a red alert icon to indicate overdoses on the timeline.	PIIM	
<b>1.7.2 3</b>		PIIM realized by reporting drug interactions when the user entering new medications (most over-the-counter — e.g., Aspirin), we may avert some situations.	At the time of medication entry, PIIM added an alert.	PIIM	
<b>1.7.2 4</b>		PIIM realized the varying types of icons on the main timeline were confusing.	Accordingly, PIIM limited the number of icon types to two.	PIIM	
<b>1.8</b>	User Preferences				
<b>1.8.1</b>		The user can set preferences for Account Settings, Homepage Options, Units, and Notifications.	Implemented. The user can access the panel from the gear menu icon in the top menu bar.	NNMC	
<b>1.8.2</b>		In the GUI Design Volume, on page 192, Account Settings displays under the “gear menu” > Preferences. This information includes: Change Password, Change Security Question, E-mail Address, and Phone.	PIIM believes this information is best accessed through the User’s Profile, by clicking on the user’s name. Removed from the menu at on page 191 in the prototype.	PIIM	
<b>1.9</b>	Widget Library				
<b>1.9.1</b>		The user can manage widgets displayed in the homepage.	Implemented. The user can easily add and remove widgets from the homepage display through the Widget Library.	NNMC	
<b>1.10</b>	Exercise				
<b>1.10. 1</b>		Accommodate different Physical Readiness Tests in	Implemented. The patient can switch between	NNMC	

		different departments.	alternative tests such as 1.5 mile run and 500 yard/450 meter swim, 12 minute Elliptical Machine, and 12 Minute Stationary Bike.		
<b>1.10.2</b>		Include three categories, Physical Readiness, Physician-Assigned and Personal exercises.	Implemented. In addition, PIIM added the Summary tab where the patient can have an overview of all three categories.	NNMC	
<b>1.10.3</b>		Display the overall Physical Readiness Test score.	Implemented. PIIM added an item Average PRT Score. In addition, the level of performance is visually indicated with face icons and colors.	NNMC	
<b>1.10.4</b>		Patients can view, track, and update exercise assigned by providers for clinical reasons.	Implemented. The user can either manually enter data or import data from external devices such as USB and Apps.	NNMC	
<b>1.10.5</b>		Allow patients to add a tracker.	This functionality is only permitted in the Personal exercise tab. Trackers for Physical Readiness Test and Physician-Assigned exercises are predetermined by the providers.	NNMC	
<b>1.10.6</b>		Allow patients to enter data through data transfer devices such as USB and bluetooth technology.	Implemented. The user can either manually enter data or import data from external devices such as USB and Apps. The user can also select which data to import.	NNMC	
<b>1.10.7</b>		Consider integrating social groups and community links so that patients can search for local exercise groups in the neighborhood.	This feature is to be implemented in the future iteration.	NNMC	
<b>1.10.8</b>		Add the range of standards up to 100 points to the y-axis	Implemented. PIIM incorporated the PRT's	NNMC	

		for PRT.	scoring ranges to the wireframes. The scores are indicated in individual exercise graph view.		
<b>1.10.9</b>		Add color-code (reference) to the background in graph view.	Implemented. Reference ranges for the line graph in individual exercise graph are shown.	NNMC	
<b>1.10.10</b>		Allow the user to set goals and see his progress toward the goal.	Implemented. The user can set a personal goal, both target score and due date.	NNMC	
<b>1.10.11</b>		Change color for the dotted line (goal) to make it more prominent.	Implemented. The color for the dotted line is brighter to increase the contrast against the background.	NNMC	
<b>1.10.12</b>		Add units for the goal in the summary graph view.	Implemented. In the PRT tab, the passing score of 45-points is indicated above the dotted line.	NNMC	
<b>1.10.13</b>		Show total miles/calories burned/time from exercise to show progress over a period of time (i.e., week, month, year).	The user can see the total distance, duration, calories burned, number of workouts, and total weight loss (if available) beginning at the starting date.	NNMC	
<b>1.10.14</b>		Allow the user to compare to the progress of other users and/or with the average per command or department for motivation. Note: Consider spouses that also uses the program (non-military personnel).	Implemented. In an individual exercise graph view, the user can switch references to compare his performance against military standard as well as other ranges (e.g. average score in the command or department).	NNMC	
<b>1.10.15</b>		Allow the user choose a custom visualization/graphing method.	This functionality may be revisited in the future iteration. As for the current design, PIIM believes that line graph serves the purpose of showing the trend in the patient's exercise history.	NNMC	

1.10.17		Added yoga to the pre-made exercise list in the Personal exercise tab.	Implemented. The user can also select types of yoga from the dropdown menu.	NNMC	
1.10.18		Add Meditation to the pre-made exercise list in personal exercises.	For this item, PIIM's recommendation is to create a module dedicated to emotional or mental hygiene and add Meditation in the module.	NNMC	
1.10.19		Add key and date to the deadline in detail graph view.	Implemented. The date appears on top of the red vertical line in individual exercise graph view.	NNMC	
1.10.20		Add icons/stick figures to personal exercises. Refer icons for 1980's Olympics.	Implemented. PIIM also developed the stick figures to PRT.	NNMC	
1.10.21		Question from NNMC: Can the user compare PRT results from different times (e.g., most recent and last year's records)?	In the current wireframe, the user cannot view data from different dates side by side. However, the user can see the entire history of his PRT results by hovering data points in graph view.	NNMC	
1.10.23		Question from TATRC and NNMC: How did PIIM determine the 6 trackable (pre-determined) exercises? How can the patient record exercises that are not included in the list?	PIIM tried to select some of most common exercises and limit the number of exercises to avoid issues of dealing with multiple attributes. Different exercises have different attributes (e.g., duration, distance, speed, steps, heart rate, calories burned, frequency, etc.) and accommodating any type of exercise may lead to problem of complexity. In addition, text entry may be better suited for exercises such as hiking, or skiing. Custom exercise trackers will be one of user	NNMC, TATRC	

			requirements for the future iteration.		
<b>1.10.24</b>		Remove the time display and just show date.	Implemented.	TATRC	
<b>1.10.25</b>		Increase the font size in table view.	Implemented. PIIM's usability specialist tested the screen in different resolutions and determined the minimum legible font size.	NNMC	
<b>1.10.26</b>		In the GUI Design Volume, page 28, the design calls for a dropdown for <i>Isaac Goodman</i> .	Having realized no other items exist for this menu, PIIM decided to remove the menu interaction, leaving just a link for <i>Isaac Goodman</i> to click to the user profile.	PIIM	
<b>1.10.27</b>		In Design Volume, page 222, PIIM realized a <i>Comments</i> bar was needed in the display.	PIIM added the <i>Comments</i> bar.	PIIM	
<b>1.10.28</b>		Usability Lead realized no method existed in current design to "Record Result" for PRT activities.	PIIM designed the screen for the user to input their PRT results.	PIIM	
<b>1.11</b>	Nutrition				
<b>1.11.1</b>		"This week" in My Food Journal. Dr. Dye suggests a line graph of one-month period to let both patients and healthcare professionals to read the trend. If we show a graph for target calories of 1600 a day, then we set the median line of 1600 cal and place one dot per day above (if the user has taken more than 1600) or below (if the user has taken less than 1600) the line. The weekly view can still be effective. We can have one "pie" per day.	PIIM made the change as outlined, and the line-graph is now part of the nutrition model.	NNMC	



<p>1.11. 2</p>		<p>In a conversation with Katie Kirkpatrick, Registered Dietician at the NNMC, we leaned the following: 1) The “Food Plate” should be modified when different plans are entered. 2) “Extra” should be specified and bars should be named consistently. 3) “Oil” is too detailed and patients will find it difficult to track and report. Use collect “added fat” (i.e., not the fat contained in natural ingredients, but added while cooking) can be used if we strongly want to keep “fat.” Added fat can be relevant data to collect because patients do gain extra calories from it. 4) This week: scrolling three 7 different pie is overwhelming. She prefers to see 7 bars shown at once. 5) Entering food data: entering how the patient feels for every meal is too frequent. Once a day should be good enough. She likes this is optional. She doesn’t like the smiley faces. Information that they can receive from these is too vague. Text box (comments) would be more useful. Patients can enter text like “how I did,” “how I felt,” “how I could improve this...” 6) When the bar turns red as it gets full, it would be more important to help patients to identify why the bar has turned red, where the</p>	<p>PIIM made the changes as outlined to the Nutrition module, and created examples of different screens for different conditions.</p>	<p>NNMC</p>	
--------------------	--	---	---	-------------	--

		problem (source) is coming from, and what could be better choices (e.g., showing healthier alternatives, white bread vs. whole grain bread). We don't need "!!" next to the red bar.			
<b>1.11.3</b>		Add information or help on serving sizes.	Accordingly, PIIM created Tool Tips in the GUI for users to learn more about serving size.	TATRC	
<b>1.11.4</b>		Confusion existed regarding a photo for "recommended foods." The food in the photo was unidentifiable.	PIIM changed the photo to a new food.	TATRC	
<b>1.11.5</b>		In a second conversation with Katie Kirkpatrick, the following edits were discovered: 1) Change "Sodium: 10g" to "Sodium 2,000mg." Generally they use milligrams to measure sodium. 2) She would like to see an additional description for the comments field to let patients know this is where they can enter their eating behavior (e.g., when, where, and why the person ate food...) 3) Change the red warning text to, "515 cal. I'm exceeding my calories budget from extras." 4) Change "Learn how to cut calories" to "Learn how to improve your diet." 5) The week range should be from Sun to Sat. Remove the bottom Sunday. 6) Change Calcium amount to 12 mg, sodium amount to 2,000 mg. 7) When patients	PIIM made the changes as defined.	NNMC	

		are entering food, it's important to remind them that they should also enter beverages. Her patients often forget to add beverages though they can easily add calories, sugar, sodium, etc.			
<b>1.11.6</b>		Have verbiage on My Food Journal tab "Weekly average calories" revised to say "Average Per Day for this Week."	PIIM made the changes as defined.	TATRC	
<b>1.11.7</b>		Conflicts and updates in the Provider Portal have required PIIM to make several edits to the Patient Portal for Nutrition.	PIIM made the following changes to the Patient Portal: "or less" verbiage becomes "maximum;" "Food to Eat" becomes "Food to Increase;" "Food to Avoid" becomes "Food to Limit;" sodium units switched from grams to milligrams; and phosphorus has been removed.	PIIM	
<b>II</b>	<b>Provider Portal</b>				
<b>2.1</b>	Homepage				
<b>2.1.1</b>		Help providers identify patients with similar names in the My Patients section. NNMC suggested adding Date of Birth, Social Security Number, or Patient ID to the table.	PIIM made the changes as defined.	NNMC	
<b>2.1.2</b>		PIIM realized it is important for a provider to know the status of the AHLTA / Healthboard data import.	Accordingly, PIIM added a "sync" icon to the top right of Healthboard, clicking on it displays the time last sync'd, as well a "sync now" function.	PIIM	

<b>2.1.3</b>		Healthboard should have an indicator of when sync'd with ALTHA.	PIIM added a "sync" icon in the top-line navigation.	PIIM	
<b>2.2</b>	Messages				
<b>2.2.1</b>		During weekly check-in meeting, Christie Applequist from NNMC requested PIIM add the following features to the Messages module: ability for patients to specify their PCP; providers should be able to copy and forward messages; have an "internal note" field only viewable to providers.	PIIM redesigns to "increase freedom" for providers, allowing them to copy and forward to individuals. However, the patient will still only be able to send messages to a recipient class (e.g. front desk, physician, nurse, etc.). PIIM will not design "Internal notes" into the Messages module, but instead will include statements like "patient is always 30 minutes late" in the HealthFocus block as "pinned" items. Pinned items can be assigned per module, or display in all modules.	NNMC, PIIM	
<b>2.3</b>	Appointments				
<b>2.3.1</b>		Per conference call on 03/07/2012, the Appointments module for Providers requires many updates. Telecons could be unorganized into chunks at the beginning of the day, and end of the day. A new type appointment called "Web Conference" needs to be added. TATRC requests information be added to help the provider to approve appointments (prerequisites for visit). A "Decline" feature is also needed in the user interface. A separate appointment should be	PIIM will continue to handle "blocked" time using the "Other" appointment type. PIIM has added appointment type "web conference." PIIM adds "Prerequisite" field to the appointment request, as well as "Decline" functionality. PIIM also added a link to the patient's profile.	TATRC, NNMC, PIIM	

		consider for appointment type “blocked.” Request for a “print-out of appointments by week” for physicians. A suggestion was made for a “snapshot” of the patient record.			
<b>2.4</b>	Immunizations				
<b>2.5</b>	Vital Signs				
<b>2.6</b>	Medical Records				
<b>2.6.1</b>		When a doctor creates a “Next Step,” PIIM realized the Provider needs to have the options to “Set Urgency.”	Field added as described.	PIIM	
<b>2.7</b>	Medications				
<b>2.8</b>	User Preferences				
<b>2.8.1</b>		Add “pager” to the provider’s profile.	PIIM added Pager Number to the provider’s profile.	NNMC	
<b>2.8.2</b>		NNMC requests ability for provider to set some information as <i>public</i> , others as <i>private</i> .	PIIM investigate this, and determined that since Healthboard is a standalone application requiring credentials, it is unnecessary for providers to have a “toggle to private.” If necessary, providers can simply delete unwanted information. Also, different users (patient, nurse, front desk, etc.) will have different permissions, levels-of-access.	PIIM, NNMC	
<b>2.8.3</b>		Because <i>User Preferences</i> was completed before <i>Public Health Advisory</i> , PIIM added the module to the notification settings of <i>User Preferences</i> .	PIIM added options “Display newly added advisories.” and “Display updated active advisories.”		
<b>2.9</b>	Widget Library				
<b>2.10</b>	Exercise				

<b>2.10.1</b>		Sean from NNMC sends a healthy list of websites and apps which empower people to manage their health and fitness.	PIIM reviewed the the list, and incorporated relevant findings into the module.	NNMC	
<b>2.11</b>	Nutrition				
<b>2.11.1</b>		During weekly check-in meeting, TATRC requests text edits of “Food to Take” to “Food to Eat.”	PIIM made the changes as defined.	TATRC	
<b>2.11.2</b>		PIIM reviewed the Provider Nutrition Module with Katie Kirkpatrick, Registered Dietician with NNMC. Ms. Kirkpatrick requests the following changes to the nutrition module: change “Food to Eat” to “Food to Increase,” change “Food to Avoid” to “Food to Limit,” don’t have daily alerts (excessive frequency); allow people to import data from external sources (e.g. eatingwell.com, cookinglight.com); remove “Learn how to cut calories” as this action is for patients only; remove “Phosphorus” as this is difficult to measure; Merge Obesity classes into a single item, i.e., “Obesity;” add “Sport Nutrition: Endurance” and “Sport Nutrition: Strength”; add “Post Gastric Lap Surgery” which should contain the following unique meal breakdown: breakfast, morning snack, lunch, afternoon snack, dinner, evening snack.	PIIM made the changes as defined.	NNMC	
<b>2.12</b>	HealthFocus				

2.12.1		Per conference call on 01/27/2012, B. Levine requests “an internal notes regarding a patient (e.g. ‘use left arm to draw blood sample’).” Within the HealthFocus area, PIIM has already included this function.	No change is required.	NNMC, PIIM	
2.13	Communication Tools				
2.13.1		In conversation with Carol Smyth, MD., Clinical Consultant of PIIM, a need was assessed to make security in the <i>Communication Tools</i> module even further enhanced.	PIIM added a “password prompt” when accessing <i>Communication Tools</i> .	PIIM	
2.13.2		In conference call with TATRC, NNMC, the request was made to change the verbiage from “Communication” to “Chat.”	PIIM made the changes to the interface.	PIIM, TATRC, NNMC	
2.14	Decision Support				
2.14.1		In conference call with TATRC, NNMC, the verbiage “expected condition” was not understood.	PIIM renamed to “at-risk conditions.”	PIIM, TATRC, NNMC	
2.14.2		In conference call with TATRC, NNMC, the verbiage “Contact Expert” was not understood.	PIIM renamed to “Subject Matter Experts.”	PIIM, TATRC, NNMC	
2.14.3		In conference call with TATRC, NNMC, it was observed that the red text in the module was difficult to read.	PIIM restyled the text for legibility.	PIIM, TATRC, NNMC	
2.14.4		TATRC observed verbiage like “quitting smoking will add 3 years to your life.”	PIIM will aim to find a place within Decision Support to add this information.	NNMC, PIIM	
2.14.5		NNMC observed “cause of death” should be part of the	PIIM added as described.		

		family tree.			
2.14.6		TATRC requests to add clinical guidelines (e.g. American Diabetes Association) to “Recommended Treatment” block.	PIIM made the change to the interface.	TATRC , PIIM	
2.14.7		Observation was made that the module should have an element of action-ability. If a user is at risk, there should be a print-out or other information that says “this is what you need to do.”	PIIM will link to <i>Educational Resources</i> module.	PIIM, TATRC , NNMC	
2.14.8		Dr. Smyth requested we remove “Similar Patients” and “Associated Diseases.” She also suggested putting all deployment related conditions into a section called <i>Deployment</i> risks. In that section, Dr. Smyth then requested CDC information get added to the “Recommended Treatment” block. She went on to say all manageable risks should be grouped accordingly, such as <i>Cardiovascular</i> risks.	PIIM made the changes to the interface.	PIIM, Clinical Consult	
2.14.9		In conference call with TATRC, NNMC, the suggestion was made to goals to the module. The example was offered that an obese patient is still a cardiovascular risk, but they could have lost 30 pounds. The request was also made to have an option to follow-up with a patient after a duration — e.g. “follow-up in 3 months.”	PIIM will add patient goals from <i>Vital Signs</i> in this module; plus add a button empowering users to follow-up within the module.	PIIM, TATRC , NNMC	



2.15	Public Health Advisory				
2.15.1		In conference call with TATRC, NNMC, the group decided a substantial revision of Public Health Advisory was necessary. The module request proactive messaging for epidemiological events. The module (as shown) also need a way to compare current outbreaks to past outbreaks, plus a forecasting component.	PIIM made the necessary change, and consulted with Director Christopher Goranson (formerly employed by NYC’s Department of Health). Edits to the module subsequently made and presented.	PIIM, TATRC, NNMC	
2.15.2		PIIM consulted Dr. Carol Smyth for feedback regarding the Public Health Advisory Module. Dr. Smyth recommended the following: 1) More clearly identify the source of the information. 2) Added a method to categorize risk. 3) Method for provides to receive advisories within module. 4) Add last updated clearly to show the freshness of the information. 5) Provide a way for physicians so view the risk calculation. 6) Have an overview screen which displays updates. Dr. Smyth also notes a few legal concerns, not specifically relevant to Healthboard. She notes patient names should not be included.	PIIM integrated the changes as outlined.	PIIM	
		PIIM consulted Dr. Dye of NNMC regarding the Public Health Module. Dr. Dye suggested: 1) Detailing out the type of Influenza. 2) Clear indicate the source of the	PIIM has integrated Dr. Dye’s comments into the next iteration.	NNMC, PIIM	

Visual Dashboard and Heads-up Display of Patient Conditions:  
Assessment Volume  
Jihoon Kang, Sayoko Yoshida, Anthony Ina, PIIM, The New School  
*Last Update:* August 6, 2012

68 5th Avenue  
Room 200  
New York, NY 10011

T: 212 229 6825  
F: 212 414 4031  
<http://piim.newschool.edu>

		information. 3) Try to be as location based as possible.			