

UX Design Documentation

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Introduction

This document describes the progress of the UX design for the web application developed for Region Östergötland by vITal.

Prototypes

Prototype 1.0 - Study Visit 1

The first prototype was developed by lead graphic designer and presented during toll-gate meeting on September 26th. The prototype was developed from the initial SRS with a focus to demonstrate main functionality, and with less attention to UX aspects.

The first prototype is found here: <https://obomlp.axshare.com>

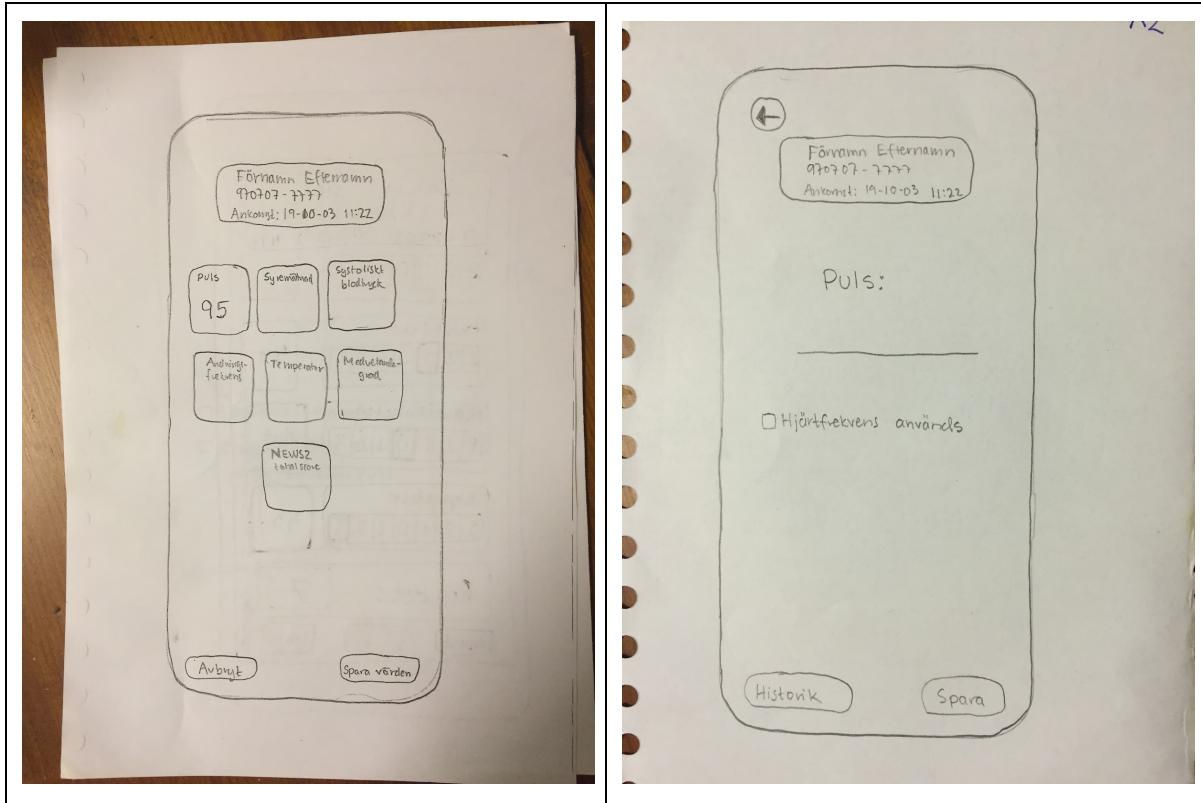
Its creation was a result of an oral dialog held with a representative for Region Östergötland during the first study visit. A majority of the prototype was developed on the spot during direct contact with the representative.

Paper Prototypes - Study Visit 2

During week 40, three different paper prototypes were developed by the UX-team. These were brought to the study visit at Vrinnevi hospital on October 7th for end-user feedback. The content of the prototypes (the headlines, the acceptable values, the scales, etc.) are based on the NEWS2 scale of assessing a patient's health status together with common ways to organize a web application.

One view uses buttons with all options visible at the same time and the two other views are lists, necessitating scrolling to view all options. While the button view lets you see all available options the list views shows more of the content of the different options at the same time. Therefore, there are two list views and only one button view since an experienced user would know what the different options are by heart and would be more interested in the content.

Prototype A



Prototype A is based upon initial prototype from tollgate, by clicking a box, a new window is then opened (image to the right) where parameter can be entered and history accessed.

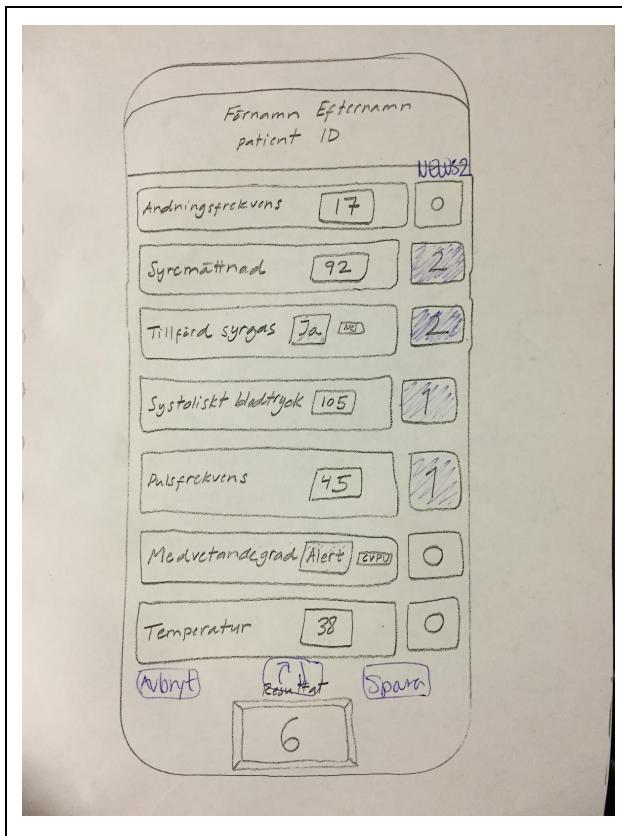
Positive aspects:

- + The options are all visible at the same time

Negative aspects:

- Small icons are harder to maneuver
- Usability might not translate well to desktop interface
- Navigability is lower due to the need to close the window before progressing to the next value.

Prototype B



Prototype B is a list view, where all parameters are listed and entered on the same page. NEWS2 score is displayed on the right along with indicating color as per NEWS2-scale, once parameter are entered.

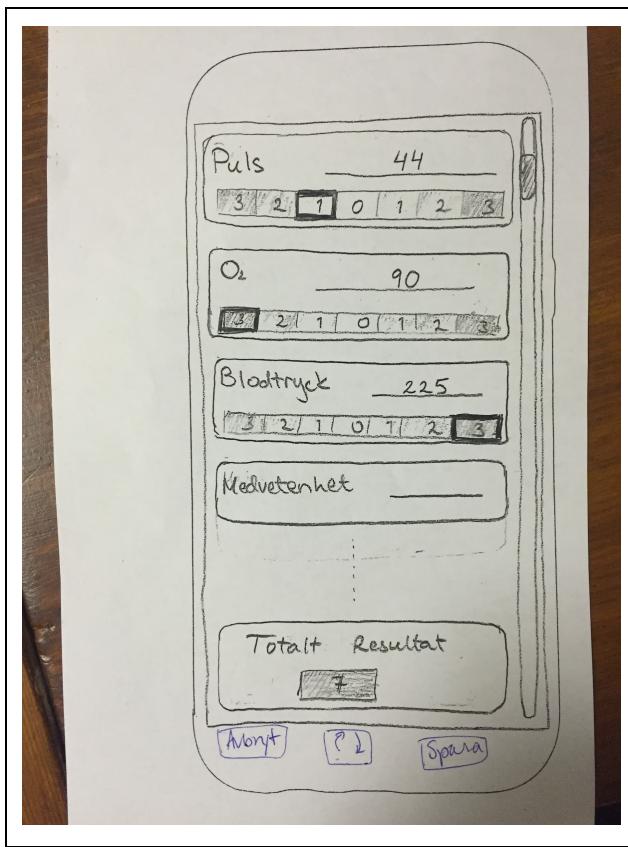
Positive aspects:

- + All options can be visible at the same time
- + Shows both NEWS2 and actual value for each parameter
- + Navigability is higher. There is no need to close a window before progressing to the next value.

Negative aspects:

- Small icons are harder to maneuver and see
- Usability might not translate well to desktop interface

Prototype C



Prototype C is based on a list view, which is scrollable, where parameters are entered on the same page. Below each parameter, the NEWS2 scale is visible in color. Once filled out, the corresponding score is highlighted by a frame.

Positive aspects:

- + Shows both NEWS2 and actual value for each parameter.
- + Navigability is higher. There is no need to close a window before progressing to the next value.
- + Larger icons are easier to maneuver and see.
- + Includes NEWS2 scale as well as score.

Negative aspects:

- Usability might not translate well to desktop interface.
- All options are not visible at the same time.

User Feedback - Study Visit 2

Due to circumstances, the paper prototypes were only tested by one end user. Luckily, this particular user had worked with a handheld device for a similar purpose at a different ward. However, the feedback and overall insight obtained during the study visit, which included observations and informal interviews with end users, gave us some indirect feedback regarding our first prototypes.

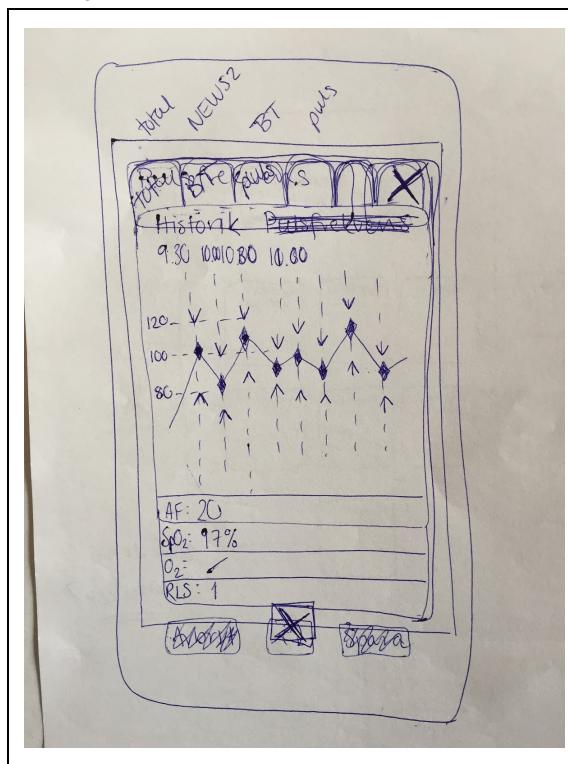
Some of the feedback and understanding of what end user need were:

- Color indication is appreciated and used in current systems
- History should be available at all times
- History should be available for individual parameters as well as for overview/combination.
- History should be displayed through graphs
- NEWS2 score for each individual parameter should be displayed
- Users are familiar with drop-down functions as well as fields for typing/entering digits.
- The interface should not be too cluttered
- Pads have in the past been too cumbersome to use for a complete work day despite offering a larger screen at the point of use. They might not fit in pockets and if they do they are heavy enough to drag clothes down. End users do not want to have to carry the pad. A possible solution would be some type of unobtrusive belt to fasten the pad on.

A complete analysis of user need and full report of the study visit is available for more details.

As the study visit gave some more clarity in the user needs regarding the available history. Resulting in a prototype of a history view created during week 41.

History view



The history view showing a graph of blood pressure and pulse in the same way as the graphs used by end users today (in "akutjournal"), below the graph is a list of exact measurements. The whole design mirrors the current design in the "akutjournal" with a graph for overview and exact

measurements at the bottom. The history view has several tabs at the top of the page, making it possible for the user to easily navigate between different kinds of history views/graphs (views for each parameter as well as total NEWS2-score).

Feedback - History View

User test 1

User feedback on the history view from usertest 1 here!

User test 2

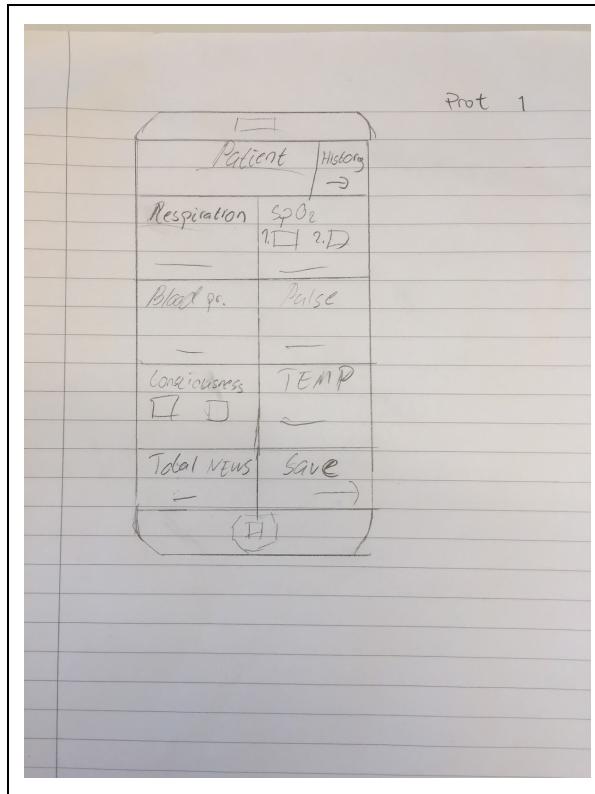
User feedback here!

Prototype workshop

During week 41, a lo-fi prototyping workshop were conducted with the whole company of vITal. The purpose of this was to take use of the full company knowledge and creativity to generate alternative solutions for user interfaces. Sketches were both done individually and in smaller groups.

The UX-team worked through the result of the workshop and with the new ideas from the workshop and input from the study visit, three prototype versions were agreed upon to develop further, below described as “box view”, “list and scale” and “expandable”.

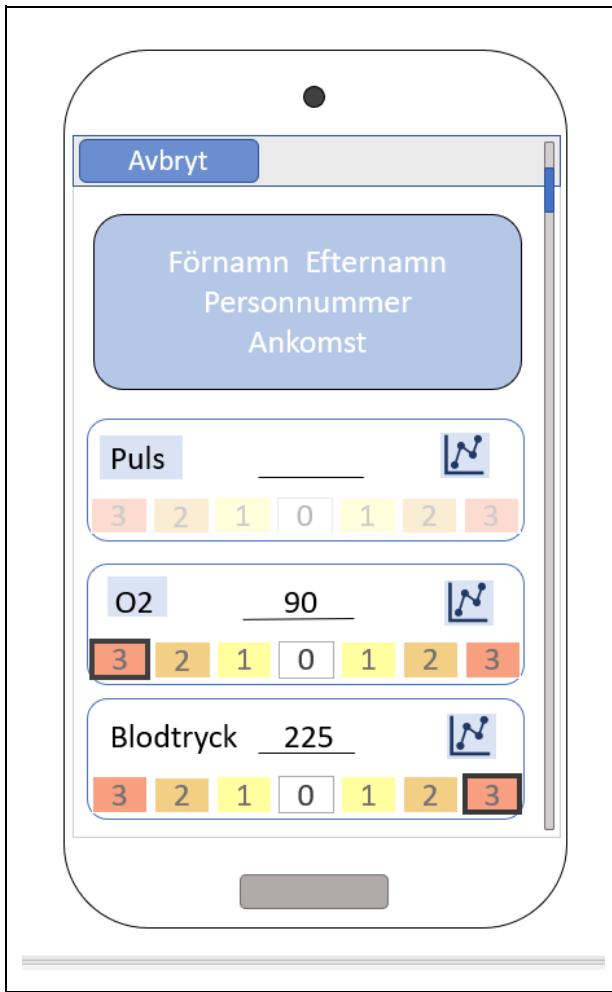
Prototype: Box view



The “box view” is a version of prototype A. The boxes now takes up the whole screen, making it

possible to meet the user need to see both actual value and score for each parameter (in the same box). As prototype A, values are entered on a seperate screen, where history is also accessed. Total NEWS2 score should be visible in the the bottom right box.

Prototype: List and scale



This prototype is based on prototype B above, but with added button (graph icon) to access history directly for each parameter. The page is scrollable and total NEWS2 score is presented at the bottom of the page.

Prototype: expandable

Nurse	Patient Id		
Respiratory Rate	Value	Score	<input checked="" type="checkbox"/>
SpO2	Value	Score	<input checked="" type="checkbox"/>
Air or oxygen	Value	Score	<input checked="" type="checkbox"/>
Systolic bloodpressure	Value	Score	<input checked="" type="checkbox"/>
Pulse per minute	Value	Score	<input checked="" type="checkbox"/>
Consciousness	Value	Score	<input checked="" type="checkbox"/>
temperature	Value	Score	<input checked="" type="checkbox"/>
Logout News Submit			

Nurse	Patient		
Respiratory Rate	Value	Score	<input checked="" type="checkbox"/>
SpO2	Value	Score	<input checked="" type="checkbox"/>
Air or oxygen	Value	Score	<input checked="" type="checkbox"/>
Systolic bloodpressure	Value	Score	<input checked="" type="checkbox"/>
Pulse per minute	Value	Score	<input checked="" type="checkbox"/>
Consciousness	Value	Score	<input checked="" type="checkbox"/>
temperature	Value	Score	<input checked="" type="checkbox"/>
Logout News & score Submit			

This prototype is a result from company workshop, where a list view is used and parameters are entered on the same page. Each field/row is expandable (as seen on the image to the right), making it possible to only see “extra information” and functionality when needed (being hidden by default) in order to keep the main view from being too cluttered. This layout responds to the user need of flexibility and that the user setting varies, e.g. sometimes the need is to only enter a few parameters quickly, and sometimes making a complete assessment and accessing history. NEWS2 score is visible for each value, as well as total NEWS2 score at the bottom of the page.

Hi-fi prototypes for user test 1

During week 42 and week 45, the 3 different prototypes were developed to be hi-fi prototypes using the tool Axure. The goal was to develop interaction functionality to be tested by end-users during the first user test at the end of week 45. The different prototypes were also numbered for easier internal communication. Below are the hi-fi prototypes presented shortly together with the link to the complete, interactable prototype.

Prototype 1: box view

Johan Doe Ålder : 35 personnummer: 992512-T254		Hjälp
Vitalparametrar		
Andningsfrekvens /min	Syremättnad %	Spara värden
Score:	Score:	
Tillförd Syrgas:	Blodtryck:	
Score:	Score:	
Puls:	Medvetandegrad:	
Score:	Score:	
Temperatur: °C	NEWS total score:	
Score:		

Puls

Tryck här för att skriva in pulsen!

 Hjärtfrekvens

Pulshistorik

Tidpunkt	Puls (approx.)
14:30	60
15:00	55
16:00	65
16:30	80
17:00	75
17:00	85
17:00	85
17:00	85

To the left: Main registration page

To the right: example of parameter page, including both registration and history.

Link to complete prototype: <https://ck317j.axshare.com>

Feedback from user test:

Prototype 2: list and NEWS2 scale

The figure displays two versions of a mobile application interface for respiratory assessment:

Left Screenshot (Main Registration Page):

- User information: John Doe, 19970707-7777, 2019-10-12 | 14.22
- Andningsfrekvens: 98 /min (Score 2)
- Syremättnad: 89 % (Score 1)
- Tillförd Syrgas: Ja (Score 2)

Right Screenshot (With Entered Values):

- User information: John Doe, 19970707-7777, 2019-10-12 | 14.22
- Andningsfrekvens: 98 /min (Score 2)
- Syremättnad: 89 % (Score 1)
- Tillförd Syrgas: Ja (Score 2)

In both screenshots, the NEWS2 scores are highlighted: Andningsfrekvens (Score 2), Syremättnad (Score 1), and Tillförd Syrgas (Score 2).

To the left: Main registration page

To the right: Main registration page with entered values, resulting in highlighted NEW2-scores

Link to complete prototype: <https://6c0zy0.axshare.com>

Feedback from user test:

Prototype 3: expandable list

Registrering

John Doe, 931029-9581

<input type="checkbox"/> Andningsfrekvens	<input type="text"/>	<input type="button" value="+"/>	
<input type="checkbox"/> Syremättnad	<input type="text"/>	<input type="button" value="+"/>	
<input type="checkbox"/> Tillförd syrgas	<input type="checkbox"/> Ja	<input type="checkbox"/> Nej	<input type="button" value="+"/>
<input type="checkbox"/> Blodtryck	Systoliskt	Diastoliskt	<input type="text"/> / <input type="text"/> <input type="button" value="+"/>
<input type="checkbox"/> Medvetande-grad	A C V P U	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="button" value="+"/>
<input type="checkbox"/> Temperatur	<input type="text"/>	<input type="button" value="+"/>	
<input type="checkbox"/> Puls	<input type="text"/>	<input type="button" value="+"/>	
NEWS2 Score		<input type="button" value="Avbryt"/>	<input type="button" value="Spara"/>

Registrering

John Doe, 931029-9581

1	Andningsfrekvens	<input type="text"/> 8	<input type="button" value="+"/>
0	Syremättnad	<input type="text"/> 98	<input type="button" value="+"/>
<input checked="" type="checkbox"/> Skala 1 <input type="checkbox"/> Skala 2			
<input type="button" value="Historik"/>			
3	Tillförd syrgas	<input checked="" type="checkbox"/>	<input type="checkbox"/> Ja <input type="checkbox"/> Nej <input type="button" value="+"/>
0	Blodtryck	<input type="text"/> 111	/ <input type="text"/> 89 <input type="button" value="+"/>
0	Medvetande-grad	<input checked="" type="radio"/>	C V P U <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="button" value="+"/>
A=Alert C=Confusion V=Voice P=Pain U=Unresponsive			

To the left: Main registration page

To the right: Main registration page with "syremättnad"-section expanded and entered values, resulting in displayed NEW2-scores.

Link to complete prototype: <https://1om9ep.axshare.com>

Feedback from user test:

Version History

Name	Date	Changes	Version
vITal	2019-10-16	First draft	1.0
vITal	2019-10-17	Minor changes in wording, spelling	1.1
vITal	2019-11-06	Additional information	1.2
vITal	2019-11-11	Hi-fi prototypes added	1.3