Valuable test results

Responsible team behind document: Validation

Important users of this document (Recipient): Customer

Short content summary: This document contains test results within the Quality Management that might be valuable for the customer.

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Content:

1. Description of quality factors

This chapter gives a short description of the evaluated quality factors in the second chapter.

1.1 Understandability

The software quality factor understandability is a factor that gives an indication on how easy it is to understand the code that is written for the application. This is a valuable quality factor for this project since the customer should be able to use the code and further develop it. This will be measured in the ratio of comments vs code.

1.2 Usability

The software quality factor usability is based on the user experience of the application or product. The experience can include factors as effectiveness, satisfaction and taste, depending on what the user values. This is a valuable quality factor for this project since the end-users of this application needs to be able to use this application in their everyday work. The application need to be more satisfying than today's solution of texting. The usability will be measured through SUS (System Usability Scale) tests and through the color contrast. The SUS tests will be done during beta tests, and the color contrast will be measured through the tool WCAG - Color Contrast Checker.

2. Test Results

In this chapter, the most valuable test results for the customer have been chosen and concluded.

2.1 Beta test results

This chapter consists of the SUS tests and beta results.

2.1.1 Beta tests, quantitative measures

The first part of the beta testing was performed with five medical students. All students were in the later part of their education and had been working clinically with patients themselves.

In the second part of the beta testing, the test persons were three doctors, two of whom were specialists in emergency medicine.

Table 3. Result of the questions specific to our application, part 2 of beta testing.

Questions	Test 1	Test 2	Test 3	Total
I think the application can be helpful in the communication with BRIVA	3	3	5	3,67
The steps to send a case was easy	3	4	5	4,00
The flow of sending a case was logic	4	5	5	4,67
The graphical design of the page is easy to understand	4	5	5	4,67
I would prefer to send pictures with this application over texting pictures	4	4	3	3,67
It feels safe to send pictures with the application	3	5	4	4,00
The application feels professional	4	5	5	4,67
The overall rating of the application is high	4	4	5	4,33

The lower score in the first question was commented on by the doctors, who said that they would want to send even more clinical information about the patient and their injury through the application to the burn unit in Linköping. They thought the application was helpful in its current state, but that it could be even more helpful if this was developed.

The fifth question also received a lower score, which was motivated by the doctors as such: they are not used to this system and would not think of it actively if they were in need of sending pictures - because they have not yet been informed of its existence. They argued that if the application's purpose and benefits were communicated thoroughly to all potential users, the willingness to use the application instead of texting pictures would increase.

Apart from the two earlier mentioned lower score, this test showed a high approval rate of the usability of the application, with a mean score of 4,21 out of 5.

With both the medical students and the doctors, an SUS test (System Usability Scale) was performed. The medical students' score was an average of 90 out of a 100, while the doctors gave the average score 93,4 out of a 100. The increase could be an effect of that the doctors tested a later version of the application in which BankID had been implemented.

The doctors mentioned that this improved the feeling of safety and trust, which is included in the SUS-test. Overall the scores of 90 and above are very good results, as a score above 68 points is considered above average usability according to the System Usability Scale method.

2.1.2 Beta tests, qualitative measures

Below are listed some recurring comments from the test users, expressed during the Think-Aloud part of the beta tests.

- Very handy application, it is clear that it will be useful
- The application is simple to use
- It's great that the colors, logo and fonts of Region Östergötland are used, it feels safe and professional.
- It is a bit risky that you have to save your errand number manually and remember
where you store it.
- What happens if I need to send multiple errands, can I then get a list of all my errand numbers? I would like to have an easy way to save these and add them to the respective patients' medical record.
- Right now it is not clear what the "Komplettera ärende"-button will lead to, and therefore the user thinks information can't be added to the errand. In proximity to the button, there should be a text that specifies that you can add info if you click it.

The problems raised in these tests have been left to future development.

2.2 Quality results

This chapter shows the evaluation of the quality factors mentioned in chapter 1.

2.2.1 Comment ratio

The metric is calculated as shown below and will specify on the code written in TypeScript.

$$\frac{Comment\ lines}{Lines\ of\ code + Comment\ lines} \cdot 100$$

Sprint	Code language	Comment ratio
2	TypeScript	21%
3	TypeScript	22%

4	TypeScript	22%

The results show high numbers over the line of 20%, which generates a high amount of understandability.

2.2.2 Colour contrast

Sprint	**Color scheme**	**Color contrast average index**	**Elements passed**	**Percent of Elements passed**
2	Red	6,6	3 out of 6	50%
3	Red	5,69	3 out of 7	43%
4	Blue (RÖ)	5,11	4 out of 8	50%

The results show quite low average indexes, yet still acceptable. However, the color scheme of different blue shades together with the gray font might not be the best combination regarding color contrast, it might still increase the usability in this application. Since the blue scheme is from the Region Östergötland standards, the recognition of the combination might increase the usability.