**Agile Business Analysis**

***Report for Sprint 2***

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# Introduction

This documentation is supposed to provide the audience with an overview of the conducted work regarding the chatbot solution for the Module Business Intelligence of the FHNW. Accordingly, this particular chapter serves as an introduction to guide the reader through this documentation.

However, in the following chapter, the project team will provide a review regarding the second sprint. As a result of this, the most important activities during the execution of this particular sprint will become displayed. These activities will become listed up according to their corresponding meeting, with either a stakeholder or coach. Thus, the given results and the relevant changes regarding the project do become examined.

In the third chapter, the project team is displaying the most important facts regarding a chatbot prototype called “Dessa.” This chatbot prototype was set up to conduct several tests regarding its acceptability as well as its usability by its potential end-users. Thus, to identify eventual shortcomings of the prototype, and so to highlight where further work was required. Furthermore, these findings did become discussed with relevant stakeholder and coaches as well.

Next, the fourth chapter is dedicated to visualizing a clarification on how such a chatbot solution might bring additional value. Therefore, the project team has gathered the given business needs of the stakeholders involved and matched them to a specific value that can be provided by a chatbot solution.

As the last section of this documentation, the authors will provide an outlook regarding the third sprint of this agile project concerning a chatbot solution for the FHNW’s module Business Intelligence.

# First Coaching Session and Review of stakeholder Needs

The following chapter is supposed to visualize a review about the second sprint, which became executed by the project team. This review will be conducted by summarizing the essential activities, meetings, and outcomes with the involved stakeholders as well as coaches. Therefore, this chapter did become sub-divided into the single meetings which were executed.

## First Coaching Session with Beat Fraefel

This sub-chapter is supposed to reflect the most critical aspects regarding a coaching session with Beat.

With Beat, we discussed our results of experimenting with “Google Action Console” und “Dialogflow.” Beat's input was not so much about our achievements but rather about the context. We need not only to consider technical feasibility but also the surrounding aspects of the solution, such as how to keep the chatbot up to date? Does it have to be a chatbot? What is the exact need of the customer? We need to justify the added value of the chatbot. Beat suggested us we might have to focus on these points on the second sprint. Hence, we organized a meeting with Frieder Witschel. So far, he only represented our stakeholder group, "the lecturer."

## Discussion with Stakeholder Frieder Witschel

The following section will cover the meeting with one of our key stakeholders, the lecturer of the FHNW’s module Business Intelligence.

Inspired from the coaching session with Beat, we defined the goal to discuss with Frieder to clarify better what his expectations and needs are towards a solution are, independent of whether it is a chatbot or not. Next to that, we wanted to know how frequently the content of the quiz and the assignment changes to estimate the amount of work required to keep a solution up-to-date.

For an improvement of the moodle quiz, he wished that open questions could be asked and that several answers could be correct. Also, an important point for him was that solutions could be discussed; for example, why something is right or wrong or eventualities. Also, e.g., do you want a hint?

The whole approach should be more engaging for the student, and the approach should enable us to look deeper into a subject.

Frieder also mentioned some interesting examples for our inspiration, such as a tool that Stanford used to engage students in discussions with each other (computer as mediator). Further, he mentioned a running FHNW project which asks students questions about an assignment they handed in to check if they understood what they did. Also, peer instruction he mentioned as an interesting area.

For his course, the amount of emails he receives from students is quite limited, usually when someone has a question about the assignment they ask during the breaks or in class. Quizzes are discussed in class anyway. Hence, the email workload from students is not an issue for him.

Concerning the content of the quiz and the assignment, Frieder mentioned that the content stays relatively the same over the years and does not change much.

## Group Conference Call

This section covers the most important activities during a conference on the project team.

The given input by Frieder Witchel input led the project team to take several decisions. These decisions did become listed up in the following table:

|  |  |
| --- | --- |
| **No.:** | **Decision:** |
| 1 | It is secondary for Frieder how difficult the maintenance of the chatbot is because the content of the quiz will change very rarely. That's why we have classified the importance of chatbot maintenance as unimportant. |
| 2 | Frieder sees only two options, where he sees a significant benefit for the use of a chatbot. As an advisor for questions about the content of the assignment or to improve the quiz by adding more interactive activities. Here only the latter can be agreed with the requirements of the client (Knut). Hence, we agreed to focus on the development of the Quiz-Chatbot. |
| 3 | To make the quiz more interactive, we decided to search for knowledge of active learning. |
| 4 | Furthermore, the project team decided to create an impact mapping for the chatbot "Dessa" and to take a closer look at WATSON's chatbot solution. |
| 5 | Nevertheless, we wanted to stick to Beat's suggestion that in this sprint, we should focus on finding reasons why a chatbot is needed or whether there are simpler alternative solutions. |

# Second Coaching Session and New Prototype

This chapter is dedicated to display the relevant information regarding the requirements gathering using the therefore developed prototype. Thus, these findings will become evaluated as well with relevant stakeholders and coaches of this particular project.

## Coaching Session with Holger Wache

The following sub-chapter covers the most important aspects regarding a coaching session with Holger.

Holger Wache was consulted as a project coach. During this particular coaching session with the project team’s focus for the second sprint did become changed. He recommended that we should not focus on the "Quiz Bot" solution, just because we assume that this is where the highest potential lies. He also said that Frieder was just one of our stakeholders. Besides him, there would not only be countless other lecturers that we should consider, but also the students, who are another important stakeholder for the chatbot. The project coach warned us of the risk of making assumptions about the student’s needs.

Additionally, he said we should exclude technical feasibility for the moment and rather focus on investigating the value that the chatbot could provide to students (e.g., stimulating active learning). Therefore, Holger helped in formulating a strategy for the project, as it is crucial for the prioritization of tasks. At the current state of the project, the main objective is that the team can demonstrate the potential value of developing a chatbot solution further. Hence, the team should prioritize its tasks by considering the limited amount of time remaining until the pitching of results on the 20th of December. By then, the team should be able to convince the decision-makers about the necessity of further investment in the development of a chatbot solution.

Hence, he recommended we should create a prototype (for example, using a multitude of PowerPoint slides and buttons working as redirects between them) of one or multiple chatbots. These chatbot prototypes could then be evaluated by the stakeholders to identify the benefits for them more clearly, as well as identifying the weaknesses of the chatbot.

Further, he recommended that we continue our research in the direction of active learning, as he expects that a chatbot could bring high benefits there. To him, it would make sense to use the knowledge gathered on how to stimulate active learning for designing the prototype. We should try to add our findings to the prototype to find out if how students can benefit from using a chatbot.

After the coaching, we decided that the focus of the sprint would now be on creating a prototype. We still focus on Frieder as our only currently engaged lecturer-stakeholder, because the focus for the chatbot was set on the Business Intelligence module by the sponsor. Furthermore, we create a chatbot prototype that focuses only on the quiz bot solution. Only if we cannot find any benefit in the evaluation of the prototype, we change direction. Further, we still decided to keep the research of alternative solutions in progress. At the very end of the sprint, the team wished to create an impact mapping, to provide a visualization of the value brought by a chatbot solution.

## Research on Active Learning

This section will review in short, the most important points regarding the conducted research on the subject Active Learning.

In order to make a possible chatbot solution for the FHNW’s module Business Intelligence more interactive for the end user, the project team decided together with the coaches to focus on the topic of active learning as well as alternative possibilities. Therefore, the project team has conduct research for the topic Active Learning and its belonging elements.

## Creation of a Prototype

This sub-chapter is dedicated to revise the creation of a chatbot prototype.

After the coaching with Holger, we created the new prototype with PowerPoint. We chose two questions from the multidimensional modeling quiz. First, the chatbot introduces itself and right away starts with the first question. If the student chose the wrong answer, it would ask him to think again, and it would lead him back to the question. As soon as one clicks on the right answer, the possibility appears to learn why these answers are correct. One can exit the quiz after each question, and the “chatbot” says goodbye.

## Feedback from Students of the Business Intelligence Module

This section is supposed visualizing the feedback sessions conducted with students from the FHNW’s module Business Intelligence. The first part is dedicated to display the feedback as well as how the feedback was gathered. Afterwards, the gained feedback will become interpreted.

### Elicitation of the Feedback

For getting feedback about the prototype, the project team first tested the first prototype with two students from the Business Intelligence module. As First, the project team has given the student the possibility to try out the “chatbot,” and then asked them the following two questions:

|  |  |
| --- | --- |
| **No.:** | **Question:** |
| 1 | If you were given the opportunity, would you use the chatbot learning assistant for learning the content related to each quiz/chapter? What do you like about the chatbot? |
| 2 | Would you please tell us, in your opinion, what would make the experience of Dessa better? |

The following table displays the feedback gained from a student called Vesna:

|  |  |
| --- | --- |
| **Question:** | **Feedback:** |
| 1 | * I like the “Learn Why” option very much. Currently, I already do something similar using on my own using Onenote. |
| 2 | * Conversational sentences and the actual content should be split so that the former can be skipped. * There should be an overview of the questions at the start so that one might choose according to his preferences. * It should be possible to go back to the question after having taken the “Learn Why” option. * Could the questions be asked in a random order? * Could the content displayed in the “Learn Why” section be somehow linked to the Moodle platform, to allow a student to study the desired aspects more? * About the design of the prototype, why is the question area so big compared to the ones of the answers? * If a question has several correct answers, it would be nice to see them all at the same time and be able to select them. |

The following table represents the feedback gained by a student called David:

|  |  |
| --- | --- |
| **Question:** | **Feedback:** |
| 1 | I think your prototype shows potential but, for now, I don’t see much of an added value, so I would not use it. |
| 2 | * Although it has a more interactive feeling than Moodle, I would not say it feels like a chatbot. * One should be able to write questions to the chatbot and get answers to them. * Needs a better design, I hope the current visual design is just a mock-up |

### Interpretation of Feedback

The aim of this section to point out how the gained feedback did become interpreted by the project team.

Overall the two students like the idea of having more information about why a certain answer is correct or wrong. The additional “chatter” from the chatbot in comparison to the Moodle quiz seems to make them feel more addressed, but once they know the questions and want to rehearse them, they want to be able to skip it and go straight to a specific question. We conclude that a mere chatbot might not be enough, but we also need a structure where the student can directly jump to one specific question in order to study the questions better. For one student our prototype could not transfer the chatbot feeling sufficiently, but this was also not the aim of the prototype. The technical limitations of PowerPoint brought up some issues, such that you cannot choose several correct answers within one question.

## Coaching Session with the Project Sponsor

As the last sub-chapter, the coaching session with the project sponsor Knut Hinkelmann will become reviewed.

After trying out the "Quiz Chatbot" prototype with students, we sat down with our project sponsor, Knut. We showed him our identified business needs and requirements. We then presented him with our prototype and explained how the students received it. From this, Knut deduced that we had deviated a little from his defined scope. He said it was not only about allowing students to be asked about the knowledge of the Business Intelligence module. In fact, the students could also be able to ask the bot questions in an interactive way, as if in a conversation. At the moment, the current prototype of the quiz bot does not cover the latter. He also asks himself whether a quiz bot alone offers any added value compared to the current Moodle quiz.

Knut recommended that we concentrate entirely on the continuing development of the prototypes, where we would incorporate the students' interactive questions. For the time being, it would be secondary for him to point out alternative solutions. We did not see this as a hard condition at the start of the project. So maybe we should rather deal with the technical feasibility. Knut pointed out that this technical feasibility could also include an explanation of connections between Dessa's main application and, if necessary, for more specific requests, alternative applications from where the information could be extracted. In that sense, we should investigate the question of where the knowledge is stored and in what conditions the chatbot system can access it.

# Clarification on how the solution achieves value

This chapter is supposed to display the reader a clarification on how a chatbot solution can bring additional value for the related stakeholders.

To do so, the project team has collected the most important business needs according to the identified stakeholders. These needs were identified in several meetings with different students as well as the corresponding lecturer of the module Business Intelligence. Accordingly, these needs were listed in the following two tables and associated with a potential value, which can be delivered by a chatbot to satisfy the particular need.

The following table visualizes the identified needs as well as the potential value offered by a chatbot regarding the lecturer:

|  |  |  |
| --- | --- | --- |
| **No.:** | **Business Need:** | **Potential Business Value provided by a Chatbot:** |
| 1 | The teacher needs to make sure that the students have understood the core concepts of the module. | A chatbot can provide a quiz set for the students, where the students can verify by themselves if they have understood the most important core concepts of the module. |
| 2 | The teacher needs to avoid that missing understanding is detected only in the exam. | A chatbot solution can offer a quiz sets for students so that they can assess their individual knowledge. Besides, a chatbot would offer an interface, where students can ask, what the relevant learnings to avoid that missing understanding is detected only in the exam. |
| 3 | The teacher should receive information regarding which concepts do need more explanations during the teaching time. | By using a chatbot solution, the teacher can access a list containing the most entered keywords from the students. With this aid, the teacher clearly can identify the concepts which were requested the most, to provide deeper explanations during the lessons. |
| 4 | Flipped classroom: making sure that the students have the required understanding before class for a successful group session in class. | With a quiz offered by a chatbot solution, the students can assess their knowledge regarding the prerequisites of the given lesson, e.g., the primers. |

The following table is supposed to visualize the business needs of the students. Here as well, the business needs to become matched with the respective business value to be gained by implementing a chatbot solution:

|  |  |  |
| --- | --- | --- |
| **No.:** | **Business Need:** | **Potential Business Value provided by a Chatbot:** |
| 1 | The general motivation regarding the self-study of the module Business Intelligence should become enhanced. | By having a fast reactive and interactive chatbot, which provides information regarding the most important concepts as well as quizzes, the motivation of students can be raised. |
| 2 | The students need to possess an effective learning tool. | By having a well-designed chatbot, which possesses the knowledge about the required concepts, as well as providing interactive quizzes, it can serve students as an effective learning tool. |

# Outlook

As the last chapter of this report, the project team provides an outlook on possible upcoming tasks. This was conducted in order to indicate in which direction the project could evolve. These tasks did become listed up in the following table:

|  |  |
| --- | --- |
| **No.:** | **Task:[[1]](#footnote-2)** |
| 1 | Dive into the classification of the possible questions asked by the student to Dessa into “templates.” Those “templates” can be identified by putting together questions with the same (or at least very similar) wording. Example of “template categories could be:   * + "Why is…?"   + "Why is it called…?"   + "What is…?", “What is the definition o…?”, “Please explain the concept of…?”   + "What is important about…?   + “Please explain the relationship between … ?”   + etc.   The project team is planning to do brainstorming in relation to this task on its first get together of the next sprint. The results of this would then be directly discussed with the project sponsor, Knut. |
| 2 | Using the already used prototyping tools, the project team could try to improve the functionalities of their prototype further. The analysis of the business needs of the stakeholders and the requirements for the solution derived from it should guide these improvement efforts. Possible directions (non-exhaustive):   * + Determine where the knowledge can be stored and how Dessa’s system can retrieve the necessary information   + Investigate the technical feasibility of an open question functionality   + Test the newly developed prototypes again with stakeholders (Business intelligence lecturer, students from the business intelligence course) and eventually expand the testing to other potential users (other lecturers? other students?) |
| 3 | Prepare the pitching of the project results. The aim is to be able to show to the project sponsor what the results of the project were so far. Further, it should show in what areas further development efforts could be invested and to effectively convince why further development is justified. |

1. [↑](#footnote-ref-2)