

Understing Behealty development process & Risk

The purpose of this document is to give you practice exploring development processes and identifying risks when embarking on beHealthy system.



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1/8/2024

MET CS 682 ASSSIGNMENT 2

Mahim Choudhury

1. USE THIS TEMPLATE: Please respond by using this Word template, leaving the headings and the gray text unchanged—but exclude the *hints* section (at the end) from your solution.
2. OBSERVE LIMITS: Observe the page and paragraph limitations; however, you may include as many appendices—additional to the required Appendix 1—as you wish. All appendices should be referred to in the main text.
3. USE ChatGPT **but only for Question 1.1.1**. We would like you to answer this question using chatGPT where possible because we feel that this is the way such writing will be created going forward. We want you to practice good use of AI generation, including your verification, re-prompting, editing, and improvement.
4. Document your chatGPT interaction as in Appendix 1 (use Document Map to facilitate navigation). You are also encouraged to do outside research to support your response but use the *References* section as indicated and observe plagiarism rules carefully, including the citation of sources, the use of quotes, and acknowledgement of modifications of external sources.
5. NAME YOUR FILE: Include your last name in the file name of the assignment. (Example: SmithMichael\_CS682Assignment1.docx)

Hints are provided at the end of this document. We will provide feedback comments and will use our best judgement in terms of the evaluation criteria listed.

The Scenario for this assignment is as follows: *BeHealthy* specializes in providing healthy nutrition and food delivery for corporations, specifically targeting small businesses and startups.

The following project characteristics apply—every one of them should influence your response:

1. The CEO believes that *BeHealthy* must prioritize user experience and integrate with social media, but investors want health and safety features to be the top priority, partially to avoid liability exposure—at least for the initial development.
2. Your initial team consists of one experienced systems analyst, a subject area expert, and one developer experienced with programming of this type of system. Five additional developers and two QA personnel are usually needed for this type of project to be delivered in the timeframe of the initial release based on your previous experience of working on similar projects.
3. The initial team reside in time zones with substantial difference. The experienced developer is very talented; however, they have a history of avoiding overtime, even at critical times.
4. To keep costs low, the CEO would like to hire as many offshore developers and QA staff as possible, even though they would probably be in very different time zones, potentially with deep cultural differences. To some degree, allow for pandemics, war, sanctions, and unrest to impact the offshore development team.
5. You are to assume the timeframe of the initial release and or iterations depending on your process selection

# Process

## 1.1 Comparison of Processes

### Waterfall Strength

Considering the project characteristics for BeHealthy, one significant strength of the Waterfall development process lies in its ability to facilitate clear communication and negotiation among stakeholders with conflicting priorities. The structured approach of Waterfall, with distinct phases and detailed documentation, provides a platform for aligning the priorities of the CEO and investors. This strength becomes crucial in a scenario where the CEO emphasizes user experience and social media integration, while investors prioritize health and safety features to mitigate liability exposure.

The comprehensive requirement analysis phase in Waterfall allows for detailed discussions and negotiations between stakeholders. By having a well-defined roadmap, the project team can systematically address conflicting priorities, ensuring that critical aspects related to health and safety are addressed in the initial stages, in line with investor concerns. The sequential nature of Waterfall enables the team to negotiate and make informed decisions on prioritization, fostering a collaborative environment for navigating the challenges posed by differing stakeholder expectations.

### Waterfall Weakness

Waterfall development has many weaknesses that can have demoralizing effects when choosing it for any project. One of the key disadvantages is that the design must

be completely specified before programming begins and that a long time elapses between the completion of the system proposal in the analysis phase and the delivery of the system (usually many months or years)[1]. In the context of Behealty, this can be bitterly true especially since the the CEO and investors have different requirement priorities. It will take longer to align both parties and decide on the best route to go with before the system proposal is made ready. Even after that, things may change in the meantime, i.e. change of business needs, change of CEO, etc. and thus the long time gap between the analysis and the delivery of the system could cause a massive disruption to the development of beHalthy system.

### RAD Strength

Rapid Application Development iterative cycles enable the development team to deliver functional prototypes rapidly, facilitating early user testing and feedback incorporation. This approach ensures that evolving requirements and stakeholder preferences can be accommodated efficiently, enhancing the overall responsiveness of the development process to the dynamic needs of BeHealthy. This agility is particularly advantageous in a project characterized by conflicting priorities between the CEO's emphasis on user experience and social media integration and investors' focus on health and safety features. Once version 1 is implemented, work begins on version 2. Additional analysis is performed based on the previously identified requirements and combined with new ideas and issues that arose from the users’ experience with version 1. Version 2 then is designed and implemented and work immediately begins on the next version [1]. For beHealthy, at the end of version 1, both stakeholders can adjust their priorities based on user experience of the version 1 and decide how to proceed with version 2 in the next iteration phase.

### RAD Weakness

Since customer feedback is an essential part of Rapid Application Development’s iterative phased approach, it can be big weakness too when customer feedback isn’t always readily available. If the client is unavailable at the time of critical decision-making or unable to make a timely decision, the quality and speed of product development may be affected [2]. For Behealthy, imagine after one or two iterations, the customer or the stakeholders were not available to provide their feedback, it will significantly delay the development flow of the entire system. It will create various uncertainty and lack of motivation amongst the requirements analysts, program management, and the developers. Eventually, this could potentially undermine the reliability and trustworthiness of the BeHealthy platform, particularly in an industry where precision and adherence to health standards are paramount.

### Agile Strength

One of the key strengths of agile is the short delivery timeframe. making them beneficial for BeHealthy's initial release or iterations. With Agile, BeHealthy can break down the project into smaller, manageable iterations called sprints, typically ranging from one to four weeks. Each sprint results in a potentially shippable product increment, allowing BeHealthy to release functional features to users early and often. This iterative delivery model aligns well with the need for rapid feedback and validation, enabling BeHealthy to adjust its course based on user input and changing market needs. It focuses on the clean delivery of individual pieces or parts of the software and not on the entire application [3]. This allows one to easily gauge and commit to a timeframe in which they can provide a functional system to the stakeholders leveraging the agile’s continuous delivery practice.

### Agile Weakness

One weakness of Agile methodology in the context of beHealthy project would be the potential difficulty coordinating and managing offshore development teams.It get’s even more difficult when they reside in different parts of the world with different time zone and cultural background. Agile methodologies heavily rely on communication, collaboration, and transparency within cross-functional teams. However, when offshore development teams are involved, challenges such as language barriers, cultural differences, and varying work practices may hinder effective collaboration and coordination. Given agile development methodologies requiring co-location of the development team, this seems to be a very unrealistic assumption [1]. Therefore, in the context of beHealthy, it could be big weakness when it comes to deciding which development process to pick.

## A1.1 (ChatGPT re Comparison of Processes)

Prompt: for the following development process, provide one strength relative to this project I described earlier. Focus on what you consider the most important strength of the development process specific to the characteristics of the given scenario. Notice the difference in requirement priorities between the CEO and the investors and other characteristics I mentioned earlier.

Response:

Considering the project characteristics outlined for BeHealthy, the Waterfall development process demonstrates several strengths that align with the unique challenges and priorities presented. The clarity and structure inherent in Waterfall provide a well-defined framework for addressing conflicting stakeholder priorities. Given the CEO's emphasis on user experience and social media integration, along with investor concerns about health and safety features, Waterfall's phased approach allows for comprehensive requirement analysis and negotiation between stakeholders. This ensures that critical features related to health and safety are meticulously addressed in the initial stages, aligning with investor priorities to mitigate liability exposure.

Moreover, the Waterfall model is well-suited to the challenges posed by the initial team's geographical dispersion and the potential inclusion of offshore developers. Its sequential nature allows for effective coordination among team members across different time zones, facilitating collaboration during distinct phases. Additionally, the detailed documentation characteristic of Waterfall supports the incorporation of offshore developers, despite potential cultural differences and external disruptions such as pandemics or geopolitical issues. While acknowledging the need for flexibility in the face of external challenges, Waterfall's strengths in communication, negotiation, and structured development make it a suitable choice for navigating the complexities inherent in BeHealthy's project characteristics.

## 1.2 Project Methodology and Roadmap

Rapid Application Development (Phased)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Iteration** | **Phase** | **Objective** | **Duration** | **Notes** |
| 1 | Analysis | Gather detailed requirements and features for version 1 | 2 weeks | Systems Analyst, Subject Area Expert |
| Development | Write code for core features for version 1 | 4 weeks | Developer(s) |
| Implementation | Build a runnable version of the system v1 | 1 week | Developer(s) |
| Testing | Test various functionalities of system v1 and provide feedback | 1 week | QA, Stakeholders, customers, Systems Analyst, Subject Area Expert |
| **Iteration** | **Phase** | **Objective** | **Duration** | **Notes** |
| 2 | Analysis | Adjust version 1’s detailed requirements and features for version 2 based on feedback | 2 weeks | Systems Analyst, Subject Area Expert |
| Development | Write new code or adjust V1 code for version 2 needs | 4 weeks | Developer(s) |
| Implementation | Build a runnable version of the system v2 | 1 week | Developer(s) |
| Testing | Test various functionalities of system v2 and provide feedback | 1 week | QA, Stakeholders, customers, Systems Analyst, Subject Area Expert |
| **Iteration** | **Phase** | **Objective** | **Duration** | **Notes** |
| 3 | Analysis | Adjust version 2’s detailed requirements and features for version 3 based on feedback | 2 weeks | Systems Analyst, Subject Area Expert |
| Development | Write new code or adjust V2 code for version 3 needs | 4 weeks | Developer(s) |
| Implementation | Build a runnable version of the system v3 | 1 week | Developer(s) |
| Testing | Test various functionalities of system v3 and provide feedback | 1 week | QA, Stakeholders, customers, Systems Analyst, Subject Area Expert |

## 1.3 Explanation of Process

The RAD Phased approach enables rapid prototyping and iterative development, allowing the project team to respond promptly to changing requirements and stakeholder preferences. This flexibility ensures that BeHealthy can adapt to evolving market demands and stakeholder priorities effectively. It is also worth noting that RAD takes good advantage of both waterfall and agile methodologies. This makes it a great choice considering the complexity of behealthy’s characteristics. The iterative nature of RAD Phased allows for the rapid delivery of functional prototypes, facilitating early user testing and feedback incorporation. This strength is particularly advantageous for BeHealthy, as it enables the project team to validate design assumptions, gather user feedback, and adjust priorities accordingly. The use of waterfall methodologies within each phase of RAD allows the system to be developed by an offshore team from various time zones to avoid any disruptions due to war, pandemic, etc. The well-versed documentation from during the analysis phase allows room for even unskilled labor to follow instruction and do their job. Since the team has an experienced skilled developer on board with them, it helps to get a good estimation of timeframe albeit their will be some unknow requirements. Other characteristics of the project where there was conflict of initial requirements between the CEO and the investors can also be resolved with iterative actions. Th e analysis phase identifi es the overall system

concept, and the project team, users, and system sponsor then categorize the requirements into

a series of versions [1]. Different versions or prototypes will allow the stakeholders and/or customers to provide feedback which in terms can help removing the initial conflicts. Regarding mitigating the weakness mentioned in section 1.1.4, the team can proactively engage stakeholders and establish clear and frequent communication channels in between the development and implementation weeks. It will allow continuous short feedback to the developers. This approach ensures developers remain on course, mitigating the risk of incomplete feedback if stakeholders or customers are unavailable at the end of each iteration.

# Risk Analysis

## 2.1 Five Risks

Based on the project characteristics provided, identify five risks in this project with the highest potential to affect the SDLC process which you selected in section 1.2. In addition, give each risk a title of two to three words and create a prioritization matrix for the risks. Avoid giving a generic response: focus on this particular system under development and its particular characteristics. (up to 1 page of 12-point text) Note the hints on risks below.

For each of the following, state the underlying risk cause, identify the risk concretely (typically “<this> may happen”), and state the potential impact should the risk materialize.

### Replace this with risk title 1

Replace this with your response—the 3 aspects above.

### Replace this with risk title 2

Replace this with your response—the 3 aspects above.

### Replace this with risk title 3

Replace this with your response—the 3 aspects above.

### Replace this with risk title 4

Replace this with your response—the 3 aspects above.

### Replace this with risk title 5

Replace this with your response—the 3 aspects above.

Complete the chart below with risk titles from above.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risk No. | Title | Estimated Likelihood of occurrence (L: 1-10) | Estimated impact (I: 1-10) | Estimated cost of managing (M: 1-10) | Priority number (Handled in order lowest to highest)((11 – L)\*(11 – I)\*M) |
|  |  |  |  |  |  |

## 2.2 Selected Risk

Select one of the above risks and provide as below.

Replace this with your response – Risk number and title from above.

## A2.2 (ChatGPT re Selected Risk)

Show your most relevant prompt to chatGPT and the response which was most relevant to your solution.

Replace this with your response.

### 2.2.1 Likelihood

State and explain the likelihood of occurrence of this risk. Use research to support the likelihood of this risk. (up to ½ page of 12-point text)

Replace this with your response.

### 2.2.2 Impact

Explain the concrete impacts on the project of this risk. Use research to support the impact of this risk. (up to ½ page of 12-point text)

Replace this with your response.

### 2.2.3 Risk Type

State whether the risk is primarily organizational or technical and explain. (single sentence)

Replace this with either “organizational” or “technical.”

### 2.2.4 Risk Management

Write an account of how you would concretely mitigate the risk. Explain whether you are proposing risk “conquest” or risk “avoidance”. Consider cost of management vs. impact of risk occurring as a tradeoff. Support your plan with research. (Up to 1 page of 12-point text.)

Replace this with your response.

# References other than chatGPT

Show that you used a wide variety of resources by listing them below and clearly indicating in the body above where you used. Make sure to use proper referencing in your paper. We suggest using APA format, but other formats are fine as long as they clearly distinguish your work from work of others in your response. In general, observe the stated plagiarism rules.

[1] Whitten, B. (2007). Systems analysis & design methods. (7th ed.). New York, NY: McGraw-Hill Irwin.

[2] Gayatri. (February 08, 2021). "Advantages and Disadvantages of RAD Methodology." <https://www.dronahq.com/advantages-and-disadvantages-of-rad-methodology/>. Accessed [January 25th, 2024].

[3] Brush, Kate. (November 2022). “Agile software development”. [https://www.techtarget.com/searchsoftwarequality/definition/agile-software-development](https://www.techtarget.com/searchsoftwarequality/definition/agile-software-development%20) .Accessed [January 25th, 2024].

# Evaluation

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Description automatically generated

**Please do not include this Hints section from your solution.**

# Hints on Process

**Clarity**:

* When you choose an interpretation, an approach, or a technique, an explanation will contribute well here towards clarity, thoroughness
* There is no such thing as a 100% “right” answer to this question. For that reason, it is important that you explain how you made your selection.
* Check for consistency.

**Technical Soundness**

* Understand and outline the key differences between Waterfall, RAD, and Agile processes and explain these thoroughly and clearly within the context of the scenario. The Waterfall, Rapid Application Development (RAD), and Agile processes are referenced in module 2 Part 1.
* Note that RAD and Agile are both iterative in nature.
* Pages 5 through 17 in the textbook will help. The notes and the textbook are not identical: there are many variants on system analysis concepts, and we encourage broad reading and experimentation, this is where research comes in.

**Thoroughness and Coverage**

* Review your solution after completing both part 1 (Development Process) and part 2 (Risk Analysis)—you may uncover additional considerations—as well as check for consistency.
* Research similar business and different SDLC process characteristics to have a better understanding on how they compare and contrast.

**Relevance**

* Reference the specific characteristics of the project in your justification. Don’t be generic. Explain any trade-offs you made developing your recommendation(s).

# Hints on Risks

**Clarity**:

* Risk should be defined precise and to the point stating the issue, what may happen and impact.

**Technical Soundness**

* Show understanding between conquest and avoidance

**Thoroughness and Coverage**

* Use references to support risk identification, likelihood, cost of impact and cost of management.
* Make sure that you explain how you would mitigate the risk, be explicit about whether your strategy is conquest or avoidance—or perhaps a combination.
* Review your entire solution after completing it—you will uncover additional considerations. Check for consistency.

**Relevance**

* A strong solution has to concentrate on real risks rather than on very unlikely situations.