Case Study Assignment – Unit 1

University of the People

MSIT 5250-01

AY2023 – T3

Instructor: Dr.

March 15, 2023

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# **Introduction**

This case study will present an organization called Bloomstar Bouquet (<https://www.bloomstar.ca>) and all their steps to become a full online floral business. This assignment is going to be divided into sections, store business will present high-level details about the organization, software development life cycle will cover which methodology should be used and why, programming languages will explore the coding process, requirements will look at business requirements that must be conquered, and finally GitHub will show a print screen of the environment along with the advantages of using this popular Distributed Version Control System (DVCS).

# **Store business**

Bloomstar Bouquet is a flower seller based in Canada where the flower industry statistics number as very promising including “the total worth of cut flowers sold in Canada in 2019 equalled $139 million” and the “$852.97 million worth of potted plants”, also in 2019 (Jeric, N., 2022). Despite that, during the COVID-19 pandemic, Bloomstar saw its physical store sales plummet and based on stubborn and old-fashion senior executives, the company’s website was rarely updated and presented just basic information about the business. Until the end of 2022, a customer could not buy flowers online from the Bloomstar website, since the business never invested in its e-commerce. Considering the organization faced substantial financial losses since 2020, the board decided to fire all the C-level (CEO, CIO, CFO, etc) and hire new senior executives with fresh and bold ideas looking to cut unnecessary costs and increase sales.

# **Software Development Life Cycle**

As one of his first decisions, the new CEO requested a feasibility study to analyze critical aspects comparing risk against return and the likelihood of success (The Investopedia Team, 2022) of two projects, one is related to closing all the physical stores around Canada and the second was developing online e-commerce. The first decision did not take too much time and was not so difficult since the physical locations were not profitable anymore, so it was a smart solution to sell them while the properties in Canada are still valuable especially during the pandemic when they largely increased their values (Toronto Regional Real State Board, 2022). For the second project, the feasibility study helped **“to determine whether it would be financially and technically feasible to develop the product” (**Behera, H.S., et al., n.d.).

Taking into consideration that there are already many flower stores selling their products on the internet, Bloomstar came late to this market and need to invest a considerable amount of money in developing e-commerce and publishing it on the internet. Since time is key in this project and the new executives came up with the idea of failing fast, a concept described by Lutkevich, B. (2023) as a philosophy involving extensive tests and incremental development to discover if the project has value, and if not to quickly move to another idea. This concept of failing fast is associated with the lean startup methodology and also the Agile software development. Considering all that, the most recommended Software Development Life Cycle approach for this floral e-commerce is Agile methodology, more specifically Scrum.

Contemplating all the challenges and the stages of a common SDLC such as *requirements analysis; feasibility study; design plan; software development; in-depth software testing; software deployment; maintenance and enhancement* (Jevtic, G., 2022), the Agile methodology seems to fit well for this project. There are several reasons why Scrum should be applied to this project, like the flexibility and rapid adaptability to change requests, inspire teamwork and collaboration, quick prototyping, continuous delivery, frequent testing and inspection leading to fast identification and problem fixes (Singh, S., 2023).

# **Programming Languages**

Today the most common programming languages that are commonly used to develop the front end, or the visual aspects of user interaction of a webpage are HTML, CSS and JavaScript, and for the back end, or the server side of the website, there are other alternatives like Python, Java and Ruby (ComputerScience.org Staff, 2022). Considering the author of this study is more familiar with Python, this programming language is recommended since it offers a great range of standard libraries and frameworks such as Flask, Django and Web2py. Besides that, it is necessary to have a Database Management System (DBMS) in place to “store, retrieve, query and manage data” (Techopedia, 2022), and for that, it is recommended to use SQL Server installed in Azure cloud because Bloomstar is already using other Microsoft applications such as Office 365, PowerBI and PowerApps. So, having Azure with SQL Server setup can increase the chance of better integration with the current IT organizational environment.

As already mentioned before Bloomstar is running against the clock to deliver reliable e-commerce for its customers, so it is essential to develop an application that can be accessed from any platform such as computers, tablets and mobile phones. Targeting mobile users, the first version of the application will focus on code usability, low cost, user interface consistency and performance, so a cross-platform application development process is recommended (Manchanda, A., 2022). Since JavaScript provides some framework options like Reactive Native, Vue.js, Angular, Cordova and NativeScript, but if these alternatives are not appropriate, Python also has Kivy and BeeWare framework resources. For future versions, once the sales grow in volume there might be a need to develop an app specifically for iOS using Swift and Android in Kotlin, which replaced Java as the main programming language for Android phones and tablets (GeeksforGeeks, 2022).

# **Requirements**

As previously covered, there is a need to have a website that allows customers to see the pictures, order flowers, and request to be delivered anywhere in Canada. For now, the decision is to cover only this country because this is where all the warehouses are located. In the future, if the organization becomes profitable again, there is a chance to expand it to the United States of America (USA). Bloomstar guarantees the order will be delivered in three business days or 72 business hours, and to accomplish that the nearest warehouse located closest to the delivery address will receive the order and will start making it.

The CIO expects that in three months there should be enough sales to start conducting data analysis and looking for tendencies which will help to set the correct prices and sales and also support the warehouses to keep their stocks in a certain way to reduce waste and keep all products available for clients. With time, the idea is to implement a program that will use machine learning to predict sales and warehouse stocks, but for now, this will be put in the parking lot, meaning it is not vital to the project and to avoid “scope creep” this idea will be kept aside for future analysis (Wrike, n.d.).

The development team supported by the CIO decided that it is a good idea to have the e-commerce application stored in a cloud services provider like Amazon AWS, Google Cloud and Microsoft Azure. Taking into consideration one more time that Bloomstar already uses many Microsoft products and the SQL Server database will be stored in Azure, it is reasonable to consider this as the best cloud solution for this project.

Any e-commerce application needs to store customers’ information including name, email, shipping and billing address, and others, but the credit card detail is sensitive information, so the team decided to start using a third-party payment processor such as Square, Stripe or PayPal. There are some advantages of using one third-party payment processor such as quick and instant approval, and simple setup, but the most important is not keeping the client’s credit card information, which means one less thing to worry about in case of a cyberattack followed by a data leak (Fabregas, K., Bottorff, C., 2023).

To keep the application working without interruptions, there is a need of having IT staff working in many areas, such as customer support, front-end and back-end developers, database administrator (DBA), cybersecurity team, and people working on-call 24/7 to keep the system always online. In short, Bloomstar's e-commerce needs to be secure since many cybersecurity regulations for online businesses store customers' data, always available giving the flexibility for clients to order flowers anytime, and have a robust infrastructure to handle as many clients as possible making purchases.

# **GitHub**

Assuming this is a considerably big and important application, a development team will be responsible for programming it, and to achieve success it seems necessary to have a version control system implemented to record “changes to a file or set of files over time so that you can recall specific versions later” (Chacon, S., Straub, B., 2014). While analyzing the market share of the most popular Distributed Version Control Systems (DVCS), like Mercurial, Bazaar, Darcs and Git, it was possible to see the last one has almost 89% of the market share (Slintel, 2023), for this reason, Git is recommended for this project.

Once Git was chosen it is time to define the repository, mainly there are two great options, GitHub being the most popular and GitLab. Considering Bloomstar is looking for a repository that can support documentation share, a quick and advanced way to search the repository framework, and based on these needs, GitHub is a better option (Shah, J., 2022). Below it is possible to see a screenshot of the GitHub account including this document saved there.

# **Conclusion**

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