# **3.1 Introduction**

This chapter is dedicated to discuss the software development of tablet pc based motor vehicle claiming solution from the technological perspective. It is discussed about the technologies considered when developing the solution and the factors considered when choosing the technologies. Furthermore technical and usability requirements are also mentioned in this chapter.

# **3.2 Software Development-Technology Considerations**

In order to develop a successful system which meets the end user expectations, it is very important to use appropriate tools in the development process. Use of any inappropriate tools will only leads to develop a system with unnecessary errors and faults and it can affect the user expectations in efficiency and reliability of the solution. It is very vital to use appropriate computer language and any other necessary tools in order to develop a successful system. So these technologies and tools will help to develop the system within a minimum development time. The main objective of TBMVCS is to do a fast, easy, accurate claiming process via tablet pc. And this is done by connecting to the company database via web service with the use of mobile networks. So it is very important to consider some factors such as platform supportiveness and the efficiency of the system. And in order to meet above mention factors we must use the most appropriate tools available in the market to develop the system.

Technological considerations - followed during the development of the system

* Efficiency and Performance
* Re-usability and flexibility
* Object oriented development support

# **3.3 Language & Tools Selection**

In modern programming field there are many programming languages and many more are introducing day by day. Core function of the system is vehicle claiming through the tablet pc, researchers have been done on many software development languages in order to recognize the appropriate language that helps efficient data retrieval and updating from the company database via web service. Since the entire solution has a 3 main components namely the ground office system, web service and tablet application it was vital to select a language that will support all these three feature so that it will reduce the learning time of different languages. Several aspects such as build powerful web based applications, powerful, flexible, Simplified Data Access, platform dependency, build fast mobile applications were considered.

For the development of ground office system main technology considerations were ASP.net platform, java platform and PHP platform. Java and asp.net provide greater object oriented programming feasibility while PHP work as a fast backend server scripting language. Visual Studio IDE provide ASP.NET development environment with rich inbuilt functionalities for faster programming. As for the web service it was considered about coding a Visual studio web service, PHP web service and also WCF web service. WCF was considered to be a far better option than other web service types Microsoft has provided.

Another key part of the solution was the development of tablet applications. Main platform considerations were android, windows and IOS. In order to develop an IOS app it requires to learn Objective C language and it also need a Mac computer which are far more expensive than the others. Android is an open source platform with free available tools. There are lot of resources available for android development as well. Windows tablet pc was feasible to build on the same environment which was used to build the ground office system and the time taken for the learning curve was fairly less than android. Visual studio provides an in built emulator for testing purposed as well.

After considering several options ASP.Net was selected as the main programming platform to develop the ground office system since ASP.Net provides an easier and stable environment to create great web applications and it supports object oriented development greatly. Although it has to be purchased for commercial use, it can be purchased for free for university students from Dream spark. Bootstrap, a free CSS library was use to design the interfaces. C# programming language was used to implement the business logics in the backend of the system.

As for the initial step tablet application was developed for windows surface tab. It is using XAML for interface development and C# for backend coding. To connect the Tab application and the web system, WCF web service technology was selected since it can be developed using the same tools which are used to develop the system. Visual Studio 2013 was selected as the main tool for developing the solution while using open source text editors such as brackets were used wherever necessary.

# **3.4 Database Selection**

Database which is most important aspect of the overall system which handles all the relevant details related to insurance as well as claims. In order to fulfill the need of database operation this system has been used SQL Server Management Studio which enables to access and manage the database engine. Another reason for using this was it was free to purchase using Dreamspark account. Management Studio brings graphical tools for database management together with a rich development environment. Database is maintained at a central cloud server such that it can be accessed from wherever necessary.

# **3.5 Technical Requirements**

Technical requirements for the development of system are as follows.

* The ground office system was developed using Visual Studio 2012 using ASP.net platform. Bootstrap, an open source CSS library was used for interface designing while backend coding was done using c# language.
* Web service was implemented as a WCF web service which is available in C# language platform. JSON parser has being used for transferring data.
* Tab application was developed for Windows platform using Visual Studio 2013 Express version. It uses XAML for interfaces and C# as backend coding.
* The application package has been developed as it is compatible for any computer which runs on windows platform such as Windows Vista, Windows 7, Windows 8 and Windows 8.1.
* Tab application is available for devices which runs Windows 8 and windows 8.1.

# **3.6 Usability Requirements**

As the usability requirements it was expected the following standards from the developed system. Effectiveness, Efficiency, Safety Utility, Learnability and Memorability are factors which will be taken in discussion. Consistency and Standard Visibility of system, status Flexibility and efficiency of use, User control and freedom Match between system and the real world will be taken into consideration too.

Requirements that ensure that there is a good match between the system and its users. In most cases usability is expressed in terms of measurable objectives. The usability of the TBMVCS is to be considered with the education of the claiming staff members, how well they are conversant with technology and a tablet pc and such conditions. If the users are not up to the standards to use the system in an effective way, system developers should conduct training sessions to develop knowledge to use the system without having any trouble.

The tab application is going to be on a small screen compared to a desktop. Also since the claiming agent would be using it under direct sunlight the visibility of the screen would be an important aspect that needs to look at. The wisest option is to have the interface with dark black letters for more clarity. The use of colors might lessen the visibility of the claiming staff member to input data on to the device. Anyhow windows tabs come with option to choose dark and light themes which user can easily swap between them according to the situation.

Interfaces of the system components shall be designed with appropriate fonts, font sizes, colors and menus in way such that users are more comfortable to work with. Solutions software components shall be designed with simplicity but covering all necessary aspects ideally with the principle “Recognition rather than recall in mind.”

# **3.7 Summary**

Technology is a one of the essential criteria when developing a software project. Through this chapter it has been described about the various technology options for the proposed software solution. Furthermore this chapter discussed the technical aspects that need to be considered for the developed solution as well as the usability requirements that needs to be considered. Next chapter is dedicated for describing the approach which was used to develop the tablet pc based motor vehicle claiming solution.