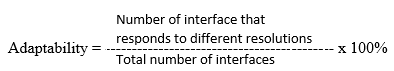
1. Software Quality Attributes and Metrics

In this section, the proponents discuss the software quality attributes with its criteria for designing a system on how to meet its functional requirements. These criteria were identified based from the general features of the system that the proponents have considered. The following metrics are listed to provide proper and efficient way in measuring the features of the system.

1. Adaptability

Adaptability is a software quality attribute which refers to the level of how the system easily support changes in environment and platform. If a system is able to easily adapt to the changes of the user’s environment without further hassle like working from a pc into a tablet, then it is considered to have high adaptability. With this attribute, the proponents can test the environment and content of the system if it can adapt to changes. Adaptability is solved by the following formula that is being shown in Formula 1.

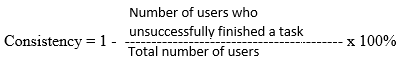


Formula 1. Adaptability Formula

Asean Aid Map has a total of 24 interfaces where repeating interfaces are counted as one, and 21 of it are responsive to different screen resolutions of the user. This indicates that the system is able to adapt to changes in resolution easily without affecting its functionalities. In solving the adaptability, the proponents divided 21 which is the number of interfaces that adapted to changes in resolution by 24 which is the total number of interfaces and multiplied by 100%, resulting to 87.5%.

1. Consistency

This type of software quality attribute is denoted as the level of how the environment and behavior stay the same throughout the system. It shows that there is one look and feel that the user will not feel lost in using the system when transitioning from one function to another. This attribute shows that the system has uniformity in its data and content which displays the up-to-date information. The proponents will use this attribute to measure the consistency of content and data of the system. Consistency is solved by the following formula that is being show in Formula 2.

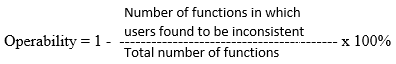


Formula. Consistency Formula

Asean Aid Map has a total of 30 different users who used the system for evaluation. Out of 30 users, there are 3 users who cannot finish a task after performing the other. The other 27 users said that the process flows and data content of system are consistent making it easy to follow. In solving the consistency, we deducted the three over 30 from one and multiplied it by 100%, resulting to 90%.

1. Operability

Operability is a software quality attribute that refers to how well the software system works when functioning. It is also an attribute that evaluates if the interfaces and functionalities of the system are functioning well. The proponents used this attribute to identify which modules of the system is functioning and which is not. This attribute can help the proponents locate the modules that need more improvement or fixes with regarding to operability. Operability is solved by the following formula that is being shown in Formula 3.



Formula 3. Operability Formula

Asean Aid Map has a total of 56 functions for the whole system based from its function point analysis. The proponents gathered different users to evaluate and test the functionalities of the system. Out of 56 functions, there were 2 functions that have been found inconsistent. These functions were beyond the control of the developers but the proponents will still makeup to fix the inconsistent functions. The result is 96% which is derived by deducting two which is the number of functions that are inconsistent over 56 which is the total number of functions from one and multiplying it by 100%. This indicates that the system has high operability and will provide correct and proper outputs to the intended users.

1. Learnability

This type of software quality attribute indicates the level of how fast the users can learn the operations of the system. It refers to the different effort of the different users in learning the application. If there is improvement in the time to finish a task means that the system has high learnability to the users. The proponents used this attribute to know how understandable the flow of processes in the system. This attribute can contribute by helping the proponents identifying improvements in terms of user engineering and aesthetics. Learnability is solved by the following formula that is being shown in Formula 4.



Formula 4. Learnability Formula

The proponents gathered 30 different users to test and use the Asean Aid Map. The users will perform a specific task for three times and the proponents track their task time in each try. At the end of the evaluation, the proponents have acquired that out of 30 users, there were 28 users that have improve task time. The learnability of the system is then solved by dividing the total number of users which is 30 to the number of users that have improved task time which is 28 and multiplied it by 100% giving a result of 93%. This means that the learnability of the system is high and users can easily lean the processes of the system.

1. Assurance

This type of software quality attribute is referred as the level of how correct and timely the data and content of the system. It is also an attribute that ensures that the functionalities of the system match with its specifications. Assurance makes sure that the system performs in accordance to its specifications and fulfills the purpose of the user. This attribute helps improve the system to output accurate and precise data based on the features and functions. Assurance is solved by the following formula that is being shown in Formula 5.



Formula 5. Assurance Formula

The proponents gathered 30 different users to test and evaluate the different functionalities of the system. They test them with an authorized account and tried different modules and processes. This evaluation is for the purpose of knowing which functions is not operating or functional. After the evaluation of the users, the proponents found that two functions are not functioning out of all the functions. The assurance of the system is solved by dividing the number of functional functions which is 36 by the total number of functions which is 38 and multiplied by 100%. The result is 94.7% which means that the system has high assurance rate.

1. Authorization

Authorization is denoted as the level of how the system handle what the user can do and see based on their authentication. It is a software quality attribute that measures the reliability of the system to provide proper modules to the authorized users. This attribute makes sure that unauthorized users will not be granted with the same permission, access, and capabilities as the authorized user. Through this attribute, the proponents can identify the modules that are not present on authorized users and further improve the system. Authorization is solved by the following formula that is being shown in Formula 6.

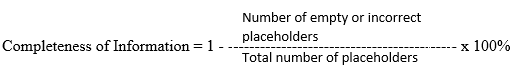


Formula 6. Authorization Formula

Asean Aid Map is a web application that allows users to register for them to unlock and user the other modules and functions of the system. Aside from the modules that are present in the public, there are 16 modules that are given only to authenticated users. The proponents gathered different users to register and test the system. After the evaluation and testing, the team got 16 out of 16 modules were given to authenticated users. With this test, authorization is solved by dividing 16 which is the number of present modules by 16 which is the expected number of modules in the system, and got a result of 100% providing a result of 100%.

1. Completeness of Information

This type of software quality attribute refers to the level how the system captures the explanatory profile of the system with respect to the information contained within it. It also assures that the information should be presented in a directly usable format that the user need not require to decode, interpret, or calculate it. This attribute also expresses that the information provided must be correct and understandable. The proponents will use this attribute to measure the wholeness of the content with the information gathered and provided. Completeness of Information is solved by the following formula that is being shown in Formula 7.



Formula 7. Completeness of Information Formula

Asean Aid Map is a web application that has a mission which is to provide useful and understandable information to its intended users. The proponents gathered different users to evaluate and test the completeness of information of the system. The users will have a registered account and test if the content of each placeholders in different views are displaying the correct information. After the evaluation and testing, the proponents found that 2 out of 40 placeholders are not displaying proper information. The problem is beyond the control of the developers but they are trying their best in fixing it. The completeness of information is solved by dividing 2 which is the number of incorrect placeholders by 40 which is the total number of placeholders and deducting it to one, and multiplied by 100% providing a result of 95%.

1. Function Point Analysis

Function point refers to the size of the application based on the internal and external characteristics and performance of the system. It was solved using its formula by multiplying the unadjusted function value and value adjustment factor. The unadjusted faction value is computed by multiplying the number of inputs, outputs, inquiries, files, and external interface to its weighting factor. A weighting factor is a series of system characteristics which is scaled from zero to five. The Asean Aid Map system has a total count of 48.3. It is the value used in computing the response score summary and value augmented function points.

There are fourteen questions raised after computing the total function point. The developers need to answer those questions using the rating scale from 0 to 5, where zero is the lowest or no influence, and five is the highest or essential characteristic. The total count is very significant in identifying the function point of the system. The total complexity adjustment response is the total value adjustment factor which is 1.13 that resulted in the total measurement of the function point of 288.15.

The cost of the project amounted to P144,075 which is composed of the hardware and software cost in the development stage. The duration of the system development of Aqua Hero is 36 weeks. The total development cost of the proposed project is P104, 000 but due to the computation of the function point, the cost increased by P40,075. The proponents will be able to finish the development in 38 weeks and the project will have an estimated total augmented cost for the project is P144,075.

1. Safety and Security Requirements

Asean Aid Map is a web application that can run on any browser and on any screen resolutions. Users can access the web application through its website using any browser on any operating system. Users have to make sure that essential requirements are there for the web application to perform its functions well. Asean Aid Map requires registration for organization to make us of all its modules and features. It is recommended that the users must complete their profile after registering to the system.

1. Testing Requirements

It is the requirements to assess the system in different ways to determine the consistency and efficiency of the said system. Testing is performed to provide users the reliability of the functions and attributes of the system. Different types of testing include unit testing, integration testing, and validation testing. This sections discusses the use and application of these testing.

1. Unit Testing

Unit testing is usually done through the use of automated software, but it can also be executed manually. It is often intended to test modules and codes which the developers have made. The proponents used black-box testing to know if the different components meet their specifications. They tested the functionalities one at a time to know if it functions or not. Through these testing, the developers were able to merge codes to minimize execution time and were able to modify other parts of the code to improve performance and increase the efficiency of the system.

|  |  |
| --- | --- |
| Main Topics | Sub Topics |
| Organization | Sign-in and Sign-up for an account |
|  | Edit organization profile |
|  | Add and remove connections |
|  | Apply and invite collaboration |
| Project | Create project |
|  | Edit project |
|  | Update changes with collaboration and resources |
|  | Moving of finished projects to portfolio |
| Notification | Notify all types of requests |
|  | Notify new projects of connections |
| Donation | Donate resources for collaborated project |
| GIS | Display markers and number of project on locations |
| Messaging | Create message |
|  | Inbox for incoming messages |
| Reports | Generate performance report |
|  | Generate summary report |
| FAQs | Provide list of questions and answers |
|  | Allow creation of new question |
| Performance Evaluation | Allow collaborators to evaluate performance of organization in finished projects |
| Matching | Provide suggestions based from matching results to organization |

Table #. Web Application Criteria Table

Table # shows the web application criteria table of the developed system. Asean Aid Map has different website criteria that need to be completed to output correct results that the application can yield. The developers must follow the listed criteria so that it would be easier for them to develop the system on a given time with its attributes and quality that can reach the expected standard and achieve its purpose.

1. Integration Testing

Integration testing is a software development process where program units are combined together and tested as groups in multiple ways.

1. Validation Testing