Advanced Software Engineering Lab-Autumn 2022-23

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Feasibility Study 2022

SOFTWARE COMPONENT CATALOGUING SOFTWARE

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Contents

1 Introduction

This report has been prepared to evaluate the economic, engineering, and environmental feasibility of software component cataloguing software provides an overview of the entire documents with the environment in which the system is to be implemented, and constraints that affect the project (cost, effort, available resources). The software component cataloguing software consists software consists of a software parts catalog and various functions defined in this parts catalog. A catalog of software components should contain information about potentially reusable components. Catalog authors can enter components into the catalog, remove components from the catalog, and assign reuse information to catalog components in the form of a set of keywords.

1.1 Environment

We are developing our software for Windows and then later we will deploy in the cloud for better access and availability.

1.2 Cost

Cost of this software should be the range of 500000 rupee or 6259 dollars and it also depend on risk (If some employee will leave in middle we have to add additionally 10000 rupee for hiring new developer)

1.3 Effort

We are developing the Software Component Cataloguing within 4 months or 12 man month.

1.4 Available Resources

We are building our project from scratch and using available tools and libraries to speedup the process.

2 Management Summary and Recommendations

From the above point of budget and delivery timing the software looks feasible and beneficial for the organization. As in the traditional and earlier version, we have Facing problem with speed and bugs so the new proposed system is atleast 10 time faster than the older version

3 Alternatives

For the above project we have decided that we will use alternative to avoid any delay of project

3.1 Technical

3.1.1 MEAN STACK

We can use mean stack for the development. The MEAN stack is one of the most popular technology stacks. Used for developing full-stack web applications. Despite being stacks of different technologies, they are all based on the JavaScript language.

MEAN Stands for:

- M – MongoDB
- E – Express
- A – Angular
- N – Node.js

This stack speeds up the development and deployment of web applications. Angular is the front-end development framework, while Node.js, Express, and MongoDB are used for back-end development.

3.1.2 Java and Other Technology

DB2
$Database_2$.A database management system that provides a flexible and efficient database platform to maintain records of patients, doctors, admin.

JSP
Java Server Pages. It is used to create dynamic web content

J2EE
Java 2 Enterprise Edition. A programming platform which is a part of java platform for developing and running distributed java

UML
Unified Modeling Language is a standard language for writing software blueprints. The UML may be used to visualize, specify, construct and document.

XML
Extensible Markup Language is a text based format that let developers describe, deliver and exchange structured data between a range of applications to client for display and manipulation.

HTTP
Hypertext Transfer Protocol. It's a service protocol

3.1.3 Python and Streamlit

Streamlit is an open source app framework in Python language. It helps us create web apps for data science and machine learning in a short time. It is compatible with major Python libraries such as scikit-learn, Keras, PyTorch, SymPy(latex), NumPy, pandas, Matplotlib etc.

3.2 Operational

We will hire Additional Stuff in case some developer left the position. The hired developer also help us to complete the project faster and the possibility of delay can be overcome easily.

4 System Description

4.1 Introduction

The software component cataloguing software consists of a software components catalogue and various functions defined on this components catalogue. The software components catalogue should hold details of the components which are potentially reusable. The reusable components can be either design or code.

4.2 User Registration

Customer can use it to register. This use case begins when the user begins to register. Users are allowed to input the basic information such as username, user id, password, confirm password address, telephone number, e-mail address, postcode, real name and so on. If the information is correct, then user can finish registration.

4.3 User Login

Customers can log in to the system. This use case begins when the user begins to log in. User inputs his username and password, and then submits. If the username and password are correct, he will successfully log in otherwise they need to reset their credential.

4.4 User Profile

A user of the catalogue may update his/her profile. A user can also change the password.

4.5 Show the most popular products being visited

Customers can get the latest information on the hot products being visited

4.6 Show the most popular products being sold

The page will show the 5 products, which has the highest sales. On the other side, after the user chooses the type of the component, the system will show the products with the highest sales relevant to this kind of product.

4.7 Product Query

User can find product by inputting part of the name of the product .This use case begins when the user inputs part of the name of the product he/she likes. The product will be found and then the user can select the product.

4.8 Delete Component

Cataloger can delete unused components those are not been visited longer time.

4.9 Rating

User can rate the product up to 5 stars. Appearing as 1 to 5-star ratings that also display the total number of reviews for the product. These ratings and reviews help with product research and purchase decisions, driving more qualified customers to the product pages.

4.10 User Feedback

User gives feedback about the product or can write a review. As we know user feedback is qualitative and quantitative data from customers on their likes, dislikes, impressions, and requests about a product. Collecting and making sense of user feedback is critical for businesses and decision making that wish to make improvements based on what their users need.

4.11 User Interface

This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.

4.12 Hardware Interface

Minimum requirements:

- Client side:
  Processor-Intel Pentium IV
  RAM-256MB
  Disk Space-1GB
- Server Side:
  Processor-Intel Pentium IV
  RAM-1GB
  Disk Space-10GB

4.13 Software Interface

- Front End Client: web browser, operating system (any)
- Web Server: WASCE, Operating System (any)
- Data Base Server: DB2, Operating System (any)
- Back End: RAD (J2EE, Java, Java Bean, Servlets, HTML, XML, AJAX),DB2 or MongoDB, OS (Windows),Web Sphere(Web Server)

5 Cost-Benefit Analysis

5.1 RISK Matrix

A risk assessment matrix (sometimes called a risk control matrix) is a tool used during the risk assessment stage of project planning. It identifies and captures the likelihood of project risks and evaluates the potential damage or interruption caused by those risks.

#	Risk Categories	Occurrence / Likelihood	Correlated to Litigation	Financial Impact	Responsible Parties
1	Higher than anticipated operating expenses - excessive energy use, water use, and maintenance	high	high	high	owner / designer / contractor
2	Establishing conflicting standards and potentially unachievable project requirements	high	mid	mid	owner
3	Construction cost and schedule impacts associated with delivering a sustainable building	mid	high	high	owner / contractor
4	Failure to meet Green code or Green Certification requirements - during the original design phase, due to end user design changes, or during construction	mid	mid	mid	owner / designer
5	Employing materials and equipment with reduced lifecycles or immediate failure (aesthetic or performance)	mid	high	mid / high	owner / designer
6	Damage to environmental and professional reputation	low	low	mid	owner

Figure 1: Risk Matrix

5.2 Break-even analysis

A break-even analysis is a financial calculation that weighs the costs of a new business, service or product against the unit sell price to determine the point at which you will break even. In other words, it reveals the point at which you will have sold enough units to cover all of your costs. At that point, you will have neither lost money nor made a profit.

If we choose the first alternative we will able to get benefit in the time saving and profit of 200000 Rupees. Where as if i choose second alternative then the we will only get Rs 100000 profit. And if we choose the last alternative we will get benefit of Rs 50000.

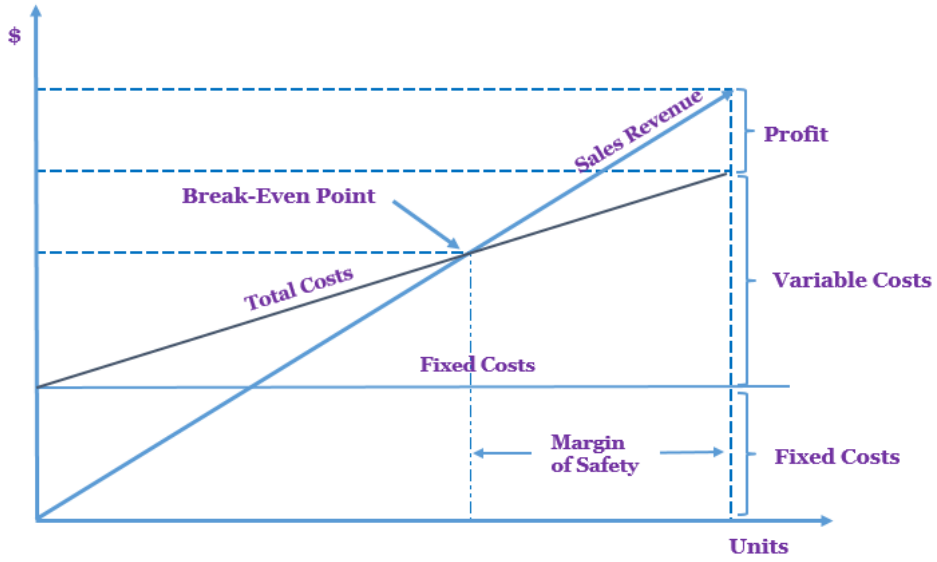

Figure 2: Break Even Analysis

5.3 (Undiscounted) Payback Period

It is based on undiscounted cash flows. It is easy to calculate but ignores the time value of money. Based on data used above the payback period can be calculated as follows:

	Net Cash flow for the year	Unrecovered investment at year end
Year 0	(5,000,000)	5,000,000
Year 1	1,700,000	3,300,000
Year 2	1,700,000	1,600,000
Year 3	1,200,000	400,000
Year 4	1,200,000	(800,000)
Year 5	1,200,000	(2,000,000)

Figure 3: Payback Period

From the data above, we can see that project investment is being recovered in the 4th year. So the formula for the payback period would be:

= 3 years +recoverable investment at the end of year 3
net cash inflow for year 4
= 3 + 400,000/1,200,000
= 3.33 years

6 Evaluation of Technical Risk

If our one technology failed to deliver the project we can switch to another technology for avoiding delay and project risk