

PROJECT REPORT

1. INTRODUCTION

1.1 Project Overview

1.2 Purpose

2. LITERATURE SURVEY

2.1 Existing problem

2.2 References

2.3 Problem Statement Definition

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

3.2 Ideation & Brainstorming

3.3 Proposed Solution

3.4 Problem Solution fit

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

4.2 Non-Functional requirements

5. PROJECT DESIGN

5.1 Data Flow Diagrams

5.2 Solution & Technical Architecture

5.3 User Stories

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

6.2 Sprint Delivery Schedule

6.3 Reports from JIRA

7. CODING & SOLUTIONING (Explain the features added in the project along with code)

7.1 Feature 1

7.2 Feature 2

7.3 Database Schema (if Applicable)

8. TESTING

8.1 Test Cases

8.2 User Acceptance Testing

9. RESULTS

9.1 Performance Metrics

10. ADVANTAGES & DISADVANTAGES

11. CONCLUSION

12. FUTURE SCOPE

13. APPENDIX

Source Code

GitHub & Project Demo Link

1.INTRODUCTION

1.1 PROJECT OVERVIEW

Recent Covid-19 pandemic has raised alarms over one of the most overlooked areas to focus:Healthcare Management,while healthcare management has various usecases for using data science,patient length of stay is one of the critical parameter to observe and predict if one wants to improve the efficiency of the healthcare management in a hospital

This parameter helps hospitals to identify patients of high LOS-risk (patients who will stay longer) at the time of admission. Once identified, patients with high LOS risk can have their treatment plan optimized to minimize LOS and lower the chance of staff/visitor infection. Also, prior knowledge of LOS can aid in logistics such as room and bed allocation planning.

Suppose you have been hired as Data Scientist of Health Man – a not for profit organization dedicated to manage the functioning of Hospitals in a professional and optimal manner

1.2 PURPOSE

The purpose is to accurately predict the Length of Stay for each patient on case by case basis so that the Hospitals can use this information for optimal resource allocation and better functioning. The length of stay is divided into 11 different classes ranging from 0-10 days to more than 100 days.

Technical Architecture:



2.LITERATURE SURVEY

2.1 EXISTING PROBLEM

Due to lack of effective data governance procedures,capturing data is one of the biggest obstacles for healthcare organizations .To use data more efficient,it must be clean,presize,correctly formatted do that it can be used across various healthcare systems.The challenges of data analytics are how the amount of data being collected,collecting meaningful and realtime data,vishual representation of data,data from multiple sources.

2.2 REFERENCES

AUTHOR NAME: Viceconti

YEAR OF PUBLISHING: 2015:-

AUTHOR NAME: Ritu,Rajesh et al.

YEAR OF PUBLISHING:2017

AUTHOR NAME:V.S.Tseng

YEAR OF PUBLISHING:2017

AUTHOR NAME:Prop.Nagarathna Kulennavar,Priyanka.K.

YEAR OF PUBLISHING:2014.

AUTHOR NAME:Dr.S.Smys

YEAR OF PUBLISHING:2019

2.3 PROBLEM STATEMENT DEFINITION

1.DESCRPTION:-

Big data in healthcare and medicine refers to these various large and complex data, which they are difficult to analyse and manage with traditional software or hardware . Big data analytics covers integration of heterogeneous data, data quality control, analysis, modeling, interpretation and validation . Application of big data analytics provides comprehensive knowledge discovering from the available huge amount of data. Big data analytics in medicine and healthcare is very promising process of integrating, exploring and analysing of large amount complex heterogeneous data with different nature: biomedical data, experimental data, electronic health records data and social media data. Integration of such diverse data makes big data analytics to intertwine several fields, such as bioinformatics, medical imaging, sensor informatics, medical informatics, health informatics and computational biomedicine. As a further work, the big data characteristics provide very appropriate basis to use promising software platforms for development of applications.

2. DESCRIPTION:-

A Robust model proposed by Ritu, Rajesh et al., should be enhanced as the model has encompassed big data. Moreover, it may compromise Data Privacy and Security and decreases the consistency and the processing of Big Data. The key advantage in a predictive data analytics includes the principal phase which is the disease recognition, and also includes evaluating and treating the diseases in efficient ways. However, to attain more effective outcomes from medical domain is still an open demand for the future work. The scattered system should be

organized to share the information between the laboratories, hospital systems, clinical centres and also with the other participants. For instance, biomedical

devices which are either HL7 or DICOM compatible can be interfaced with the Laboratory Investigation System (LIS) data and the Hospital Information system. Furthermore, the data analytics shall be enhanced through machine learning techniques to make the data analytics effective. Security solutions should guarantee protection for analytics and Big Data Frameworks.

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4. DESCRIPTION:-

The rapid deployment of new emergency devices (i.e., wireless communications, mobile computing, and mobile devices) and patient monitoring systems has allowed for the focus to be on the design and delivery of digital health services that, leveraging real-time data, foster integrated and effective governance. It is essential to ensure a personalized health service, early disease diagnosis, and support for patient undergoing online care treatments . The gradual implementation of advanced digital solutions will support the clinical team's decisions and release time for the most value- added clinical activities and treatment of the most complex cases. BD and AI not only have great potential in the fight against infectious diseases but can also be used for rapid drug and vaccine development . Despite the important strides made in healthcare digitalization, there are numerous challenges to making the healthcare sector more resilient in the face of health crises. In this regard, it is necessary not only to strengthen the system but also to change its architecture toward a connected care model in which the organization, care, and assistance processes are redefined from a digital perspective and allow for making informed decisions using cutting-edge technology and BDA

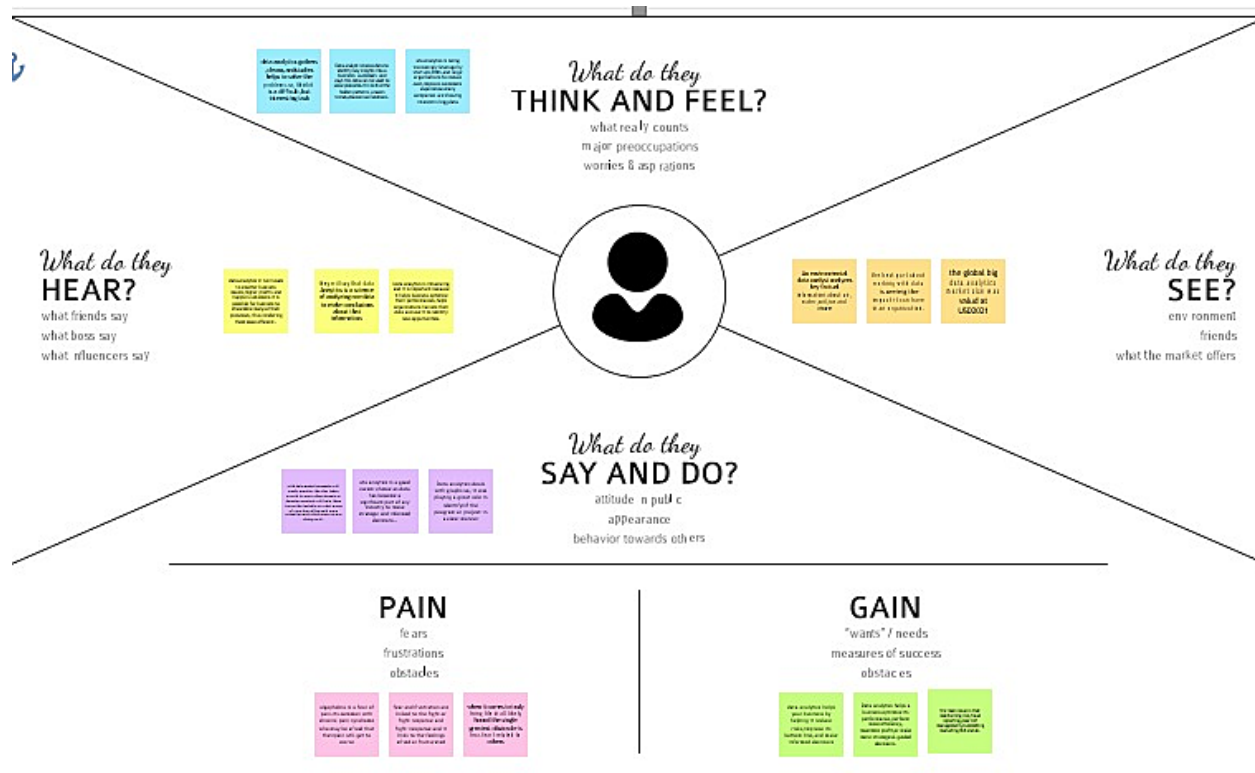
5. DESCRIPTION:-

This paper gives a brief introduction about how we can uncover additional value

from health information used in health care centers using a new information management approach called as big data analytics .Including big data analytics in health sector provides stakeholders with new insights that have the potential to advance personalized care, improve patient outcomes and avoid unnecessary costs. Analytics when applied in the context of big data is the process of examining large amounts of data, from a variety of data sources and in different formats, to deliver insights that can enable decisions in real or near real time. Various analytical concepts such as data mining, natural language processing, artificial intelligence and predictive analytics can be employed to analyze, contextualize and visualize the data.

3.IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



3.2 IDEATION AND BRAINSTORMING


Brainstorm & Idea Prioritization :

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box

ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions. Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Step-1: Team Gathering, Collaboration and Select the Problem Statement.

Template




Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 10 minutes to prepare
🕒 1 hour to collaborate
👤 2-8 people recommended

[Share template feedback](#)



Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

1


Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes


micromatter


How might analytics be used in the situation of hospital operations?





Key rules of brainstorming


To run a smooth and productive session:


 Stay in topic.

 Encourage wild ideas.

 Defer judgment.

 Listen to others.

 Go for volume.

 If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

Brainstorm

10 minutes

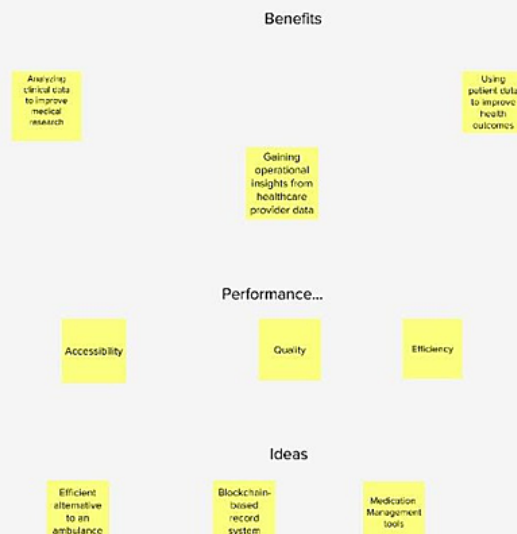
TIP
You can select a sticky note and hit the pencil icon to switch to sketching (or to start drawing).



Group ideas

20 minutes

TIP Ad campaigns take time to develop, so make it easier to find, track, measure, and improve important data as they roll out your ads.



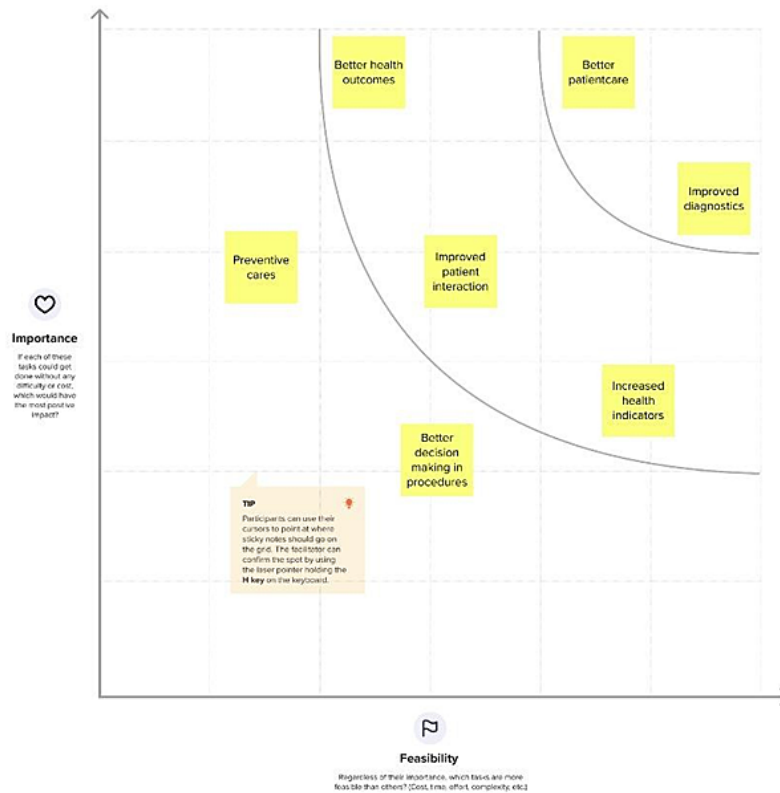
Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



→

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

- A Share the mural**
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- B Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

- Strategy blueprint**
Define the components of a new idea or strategy.
[Open the template →](#)
- Customer experience journey map**
Understand customer needs, motivations, and obstacles for an experience.
[Open the template →](#)
- Strengths, weaknesses, opportunities & threats**
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
[Open the template →](#)

[Share template feedback](#)

3.3 PROPOSED SOLUTION

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

Project team shall fill the following information in proposed solution template.

Sl.No.	Parameter	Description

1.	Problem Statement (Problem to be solved)	Recent covid-19 pandemic has raised alarms over one of the most overlooked areas to focus :Healthcare Management.While healthcare management has various use cases for using data science ,patient length of stay is one critical parameter to observe and predict if one wants to improve the efficiency of the health care management in the hospital. This parameter helps hospitals to identify patients of high -LOS risk ,once identified proper treatment can be given to them and logistics of bed allocation planning.
2.	Idea / Solution description	The short project forecasting surgery volume at a medical the portfolio project analysed twitter trends on covid-19 vassinations.some of them are the predicative analyst poroject,the out-of-the-box project.this is the purpose of healthcare data analysis using data-driven findings to predict and solve the problem before it is too late.
3.	Novelty / Uniqueness	Potential sources of information about health care numerous and diverse,but in practice four main sources are used medical records,certificates of the other health-related events responses in surveys and facts obtained in the course of conducting resources/
4.	Social Impact / Customer Satisfaction	Potential satisfaction is measured with the help of an HCAHPS survey(also known asCAHPS(customer assessment of healthcare providers and system) Hospital survey,which refers to a set of survey that collect patients data to measure patients experience about hospital care and services
5.	Business Model (Revenue Model)	A business model describes the resources ,processes and cost assumption that an organization makes that will lead to the delivery of a unique value propotion to the customer.

6.	Scalability of the Solution	Scalability is the ability of the healthcare intervention shown to be efficient on a small scale and/or under controlled condition to be expanded under real world conditions to reach a greater proportion of the eligible population while retaining effectiveness
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3.4 PROBLEM SOLUTION FIT

Project Design Phase-I - Solution Fit Template

Team ID: PNT2022TMD34052

PROJECT: Analytics for Hospitals and Health care Data

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) Who is your customer? I.e. working parents of 0-5 y.o. kids customer segmentation is the process of dividing customer into groups based on common characteristics so companies can market to each group effectively and appropriately in business. In business marketing a company might segment customers according to a wide range of factors including industry number of employees.	6. CUSTOMER CONSTRAINTS What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices. Scope it refers to not only what the project includes but also what is excluded. Cost: Cost is the simply the amount of money that can be invested in particular activity to achieve desired outcome. Time: time is another key element start no earlier than and finish no later than. Quality: the quality focuses on the characteristics of deliverable or product the quality depends on how closely it matches to outcome. Customer satisfaction: how satisfied the customer is.	5. AVAILABLE SOLUTIONS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking Identify the problem Diagnosis and analysis of plan Searching for alternative Evaluation of alternatives Selection of alternatives Implementation and follow ups	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS Which jobs-to-be-done (or problems) do you address for Making selection Product planning Product development Buying process: your customers? There could be more than one, explore different sides.	9. PROBLEM ROOT CAUSE What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations. Problem solving enables us to identify and exploit opportunities in the environment and exert control over the future. Problem solving skills and problem solving process are critical part of daily life both as individual and organizations.	7. BEHAVIOUR What does your customer do to address the problem and get the job done? I.e. directly rejected, find the right solar panel installer, calculate when call back for what the customer wants. Ask the questions in caring and concerned manner Put yourselves in their shoes Apologize without blaming Ask customers "What would be acceptable" Solve the problem or find some one who can solve it quickly	
Focus on JSP, tap into BE, understand RC	3. T What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations. Problem solving enables us to identify and exploit opportunities in the environment and exert control over the future. Problem solving skills and problem solving process are critical part of daily life both as individual and organizations.	4. CH What kind of actions do customers take online? Extract online channels from #7 They will seek the discount. Some of them are wandering customers. Some may be impulsive buyer Need based shoppers are more Loyal customers.	Focus on JSP, tap into BE, understand RC	
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4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail

		Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Undertaking various Registration	HMS is able to facilitate various Registration to enter the details of patients.
FR-4	Visualizing Data	User can visualize Departments,ward types,bed availability,city id ,remaining rooms availablethrough Dashboard created using IBM cognos Analytics.
FR-5	Check Out	The HMS helps facilities in ensuring all formalities and commitments using unique ID.
FR-6	Generating report	User can view his/her health report and can make Decisions accordingly.

4.2 NON FUNCTIONAL REQUIREMENTS

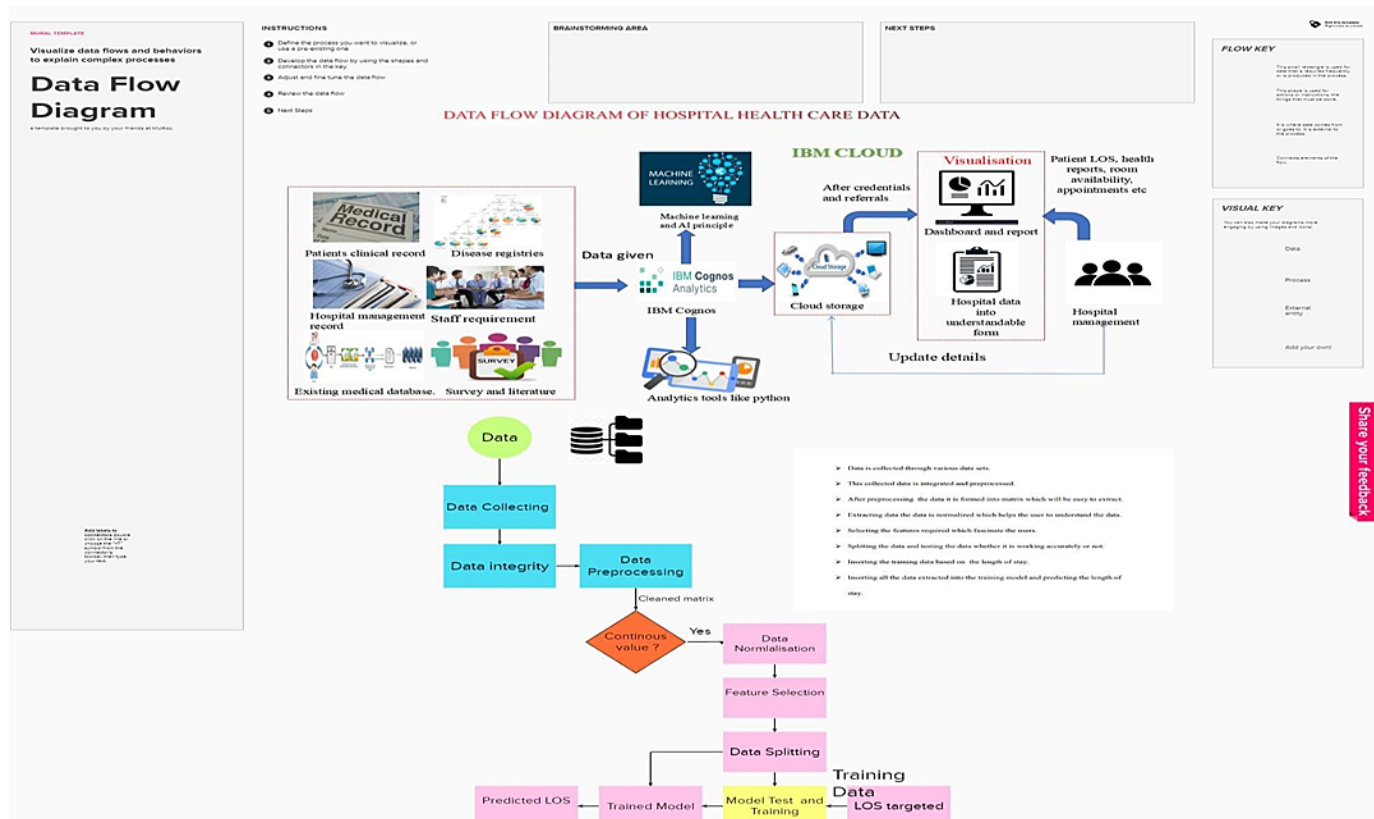
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The application will have a simple and user friendly graphical interface.User will able to understand and use all the features of the application easily.Any action has to be performed with just a few clicks.
NFR-2	Security	For security of the application the technique known as database replication should be used so that all the important data should be Kept safe.Incase of crash the system should be able to backup and recover the data.
NFR-3	Reliability	The application has to be consistent at every scenario and has to work without failure in any environment.
NFR-4	Performance	Performance of the application depends on the response time and the speed of the data submission .The response time of the application is direct and faster which depends on the efficiency of implemented algorithm.

NFR-5	Availability	The application has to be available 24x7 for users without any interruption.
NFR-6	Scalability	The application can withstand the increase in the number of users and has to be able to develop Higher versions.

5.PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS



5.2 SOLUTION AND TECHNICAL ARCHITECTURE



S. No	Component	Description	Technology
	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js
	Application Logic-1	Logic for a process in the application	Java / Python
	Application Logic-2	Logic for a process in the application	IBM Watson STT service
	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
	Cloud Database	Database Service on Cloud	,IBM Cloudant etc.

	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
	External API-2	Purpose of External API used in the application	Aadhar API, etc.
	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Kubernetes,

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA Encryptions
	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-	Technology used

		services)	
	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
	Performance	Design consideration for the performance of the application (e.g use of load balancers,distributed servers etc)	Technology used

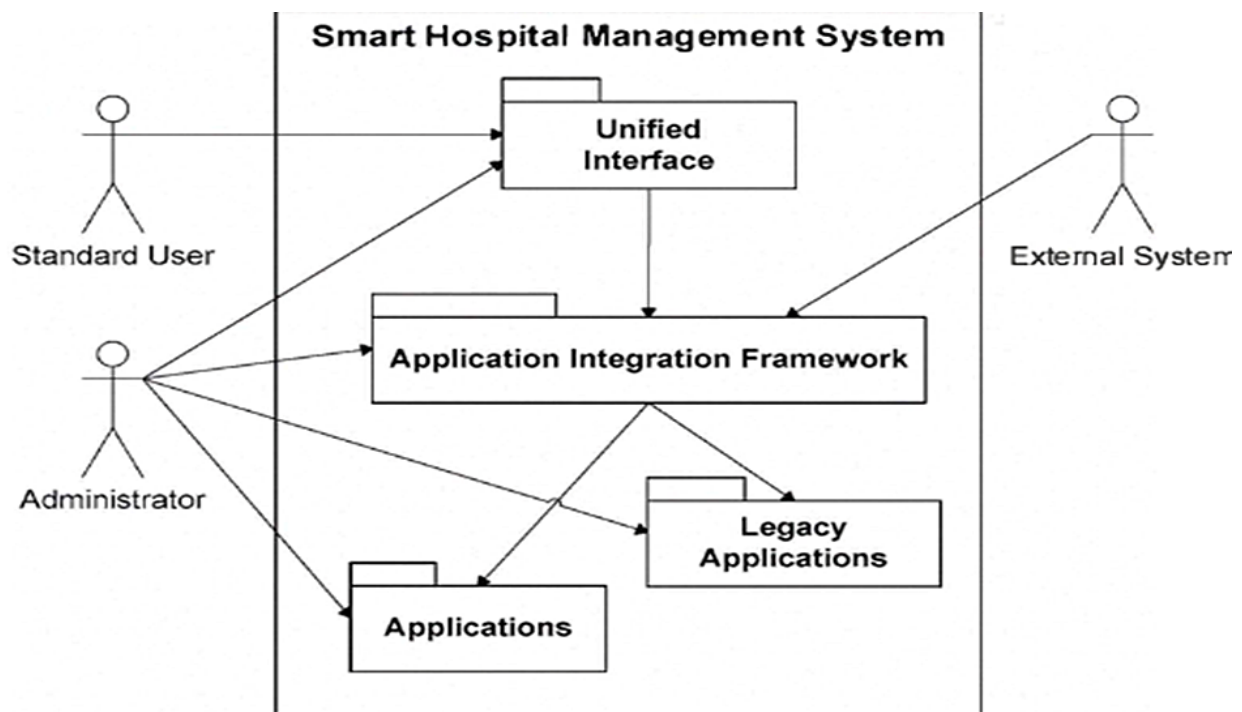


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	Performance	Design consideration for the performance of the application (e.g use of load balancers,distributed servers etc)	Technology used

5.3 USER STORIES

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	HIV/AIDS Risk Smart Form for Data Entry	USN-1	As a <u>Clinician</u> , I need to review , <u>consolidate</u> and update HIV/AIDS Risk Form. So that I can Determine the patient's risk of HIV/ <u>AID</u> (risk <u>category</u>),and ensure proper remedy accordingly.	I can access patient record or data accurately	High	Sprint-1
	BPA to prompt ordering HIV/AIDS on Admission	USN-2	As an Inpatient, I want to be prompted to order HIV/AIDS on admission.so that I remember to place my patient on AIDS	Maintain the record for correct preference.	High	Sprint-1
	HIV/AIDS dynamic order group in Admit order sets	USN-3	As an <u>inpatient</u> , I want to view only risk-appropriate HIV/AID options in Admission order sets So that I can ensure my patient is getting optimal HIV/AID prophylaxis.		Low	Sprint-2
		USN-4	As a user, I can access the data in <u>visualise</u> mode.		Medium	Sprint-1
	Dashboard	USN-5	As a user, I can access the data from the <u>queries,graph</u> , pie char		High	Sprint-1
Customer (Web user)			Get the older information from the hospitals			
Customer Care Executive			Have data in graph modes		Medium	
Administrator			Access in cloud easily		Medium	

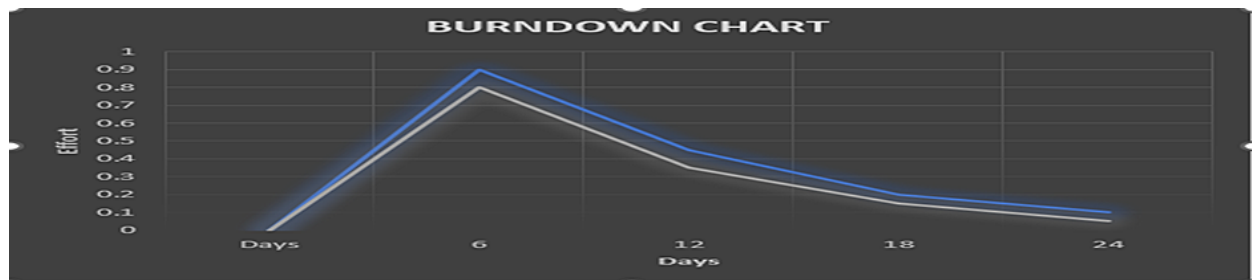
6.PROJECT PLANNING AND SHEDULING

6.1 PROJECT PLANNING AND ESTIMATION

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	8	High	M.kaviya R.Sharmi
		USN-2	As a user ,I will receive conformation email once I have registered for the application.	8		M.Vibisha
	Login	USN-3	As a user,I can log into the application by entering email, password.	4	High	K.Suruthika R.Sharmi
Sprint-2	Working with Dataset	USN-4	To work with Dataset,Understood and load the dataset.	10	Low	R,Sharmi M.Vibisha
		USN-5	Exploration of current health condition including patients byward types,Departments,city,bed etc.	5		K.Suruthika M.Kaviya
Sprint-3	Data Visualization	USN-6	Visualization of average age for issue in health condition types ,and exercise for that.	5	Medium	R.Sharmi K.Suruthika
		USN-7	Exploration of the type of Disease.	7		
		USN-8	Exercise to get away from Disease.	6		
Sprint-4	Dashboard Creation	USN-9	Dashboard showing different types of Visualization.	20	High	R.Sharmi K.Suruthika M.Kaviya M.Vibisha

6.2SPRINT DELIVERY SCHEDULE

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022



7.CODING AND SOLUTIONING

7.1 FEATURE 1

Login using HTML

Features of HTML:

HTML is the most common used language to write web pages. It has recently gained popularity due to its advantages such as, It is the language which can be easily understood and can be modified. Effective presentations can be made with the HTML with the help of its all formatting tags. It provides the more flexible way to design web pages along with the text.. Links can also be added to the web pages so it helps the readers to browse the information of their interest. You can display HTML documents on any platforms such as Macintosh, Windows and Linux etc. Graphics, videos and sounds can also be added to the web pages which give an extra attractive look to your web pages.

PYTHON

Flask comes with built-in development server as well as fast

debugger

It also contains the integrated support required for unit testing

It has the feature of restful request dispatching

Comes with Jinja2 templating technique

Flask supports secure cookies i.e. client-side sessions

Also has the WSGI 1.0 compliant feature.

It is based on Unicode.

Python Flask is extensively documentation .

ANACONDA

It is free and open-source.

It has more than 1500 Python/R data science packages.

Anaconda simplifies package management and deployment.

It has tools to easily collect data from sources using machine learning and AI.

JUPYTER

Data visualizations:

Most people have their first exposure to Jupyter Notebook by way of a data visualization, a shared notebook that includes a rendering of some data set as a graphic. Jupyter Notebook lets you author visualizations, but also share them and allow interactive changes to the shared code and data set.

Code sharing. Cloud services like GitHub and Pastebin provide ways to share code, but they're largely non-interactive. With a Jupyter Notebook, you can view code, execute it, and display the results directly in your web browser.

Live interactions with code. Jupyter Notebook code isn't static; it can be edited and re-run incrementally in real time, with feedback provided directly in the browser. Notebooks can also embed user controls (e.g., sliders or text input fields) that can be used as input sources for code.

Documenting code samples. If you have a piece of code and you want to explain line-by-line how it works, with live feedback all along the way, you could embed it in a Jupyter Notebook.

8.TESING

8.1 Test cases

Verify that the portal for patient and Employee registration has all the mandatory fields required for registering a patient.

Verify that after filling the patient details

Verify that card has information like patient details, doctor assigned, department, the application number, DOJ, bed allocated(if applicable) etc.

Verify that after patient checkup based on the requirement the details are updated in the patient details database.

Verify that for existing patients based on the application number of the patient, their records are added/updated in the database.

Verify that the system has an admin for doctors as well.

Visualise the Dashboard showing various visualizations of Dashboard.

Verify that the details of existing users can be updated in the system.

Verify that authorized users can also see total day-wise billing done.

Verify the admin for hospital inventory, room and bed manage.

Verify that the admin has a record of rooms and beds availability and the same gets updated based on their allotment and departure to patients

9.RESULTS

Hospital management is a computer system that helps manage the information related to health care and aids in the job completion of health care providers effectively. They manage the data related to all departments of healthcare such as,Clinical,Financial Laboratory Inpatient Outpatient Operation theater Materials ,Nursing, Pharmaceutical RadiologyPathology etc.ULTS

10.ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

It improves better staff interaction

Better communication experience

Data is more confidential and secure

DISADVANTAGES:

Fear of data security breaches

Difficulty in migrating from manual process,because both staff and patients are used to the manual process and so are unable to speedily cope with the new system

11.conclusion

Health is the priority for everyone in the world; therefore, it's crucial to have a system that improves the healthcare system. Hospital Management System has changed all administrative and clinical operations of the healthcare field. This project Online Hospital Management System purpose to develop the software that includes all the features of management and operations of the hospital, which are necessary. It allows healthcare providers to enhance operational effectiveness, reduce prices, medical errors, and time consumption and improve the delivery of quality of concern

12.FUTURE SCOPE

Big data' is massive amounts of information that can work wonders. It has become a topic of special interest for the past two decades because of a great potential that is hidden in it. Various public and private sector industries generate, store, and analyze big data with an aim to improve the services they provide. In the healthcare industry, various sources for big data include hospital records, medical records of patients, results of medical examinations, and devices that are a part of internet of things. Biomedical research also generates a significant portion of big data relevant to public healthcare. This data requires proper management and analysis in order to derive meaningful information. Otherwise, seeking solution by analyzing big data quickly becomes comparable to finding a needle in the haystack. There are various challenges associated with each step of handling big data which can only be surpassed by using high-end computing solutions for big data analysis. That is why, to provide relevant solutions for improving public health, healthcare providers are required to be fully equipped with appropriate infrastructure to systematically generate and analyze big data. An efficient management, analysis, and interpretation of big data can change the game by opening new avenues for modern healthcare. That is exactly why various industries, including the healthcare industry, are taking vigorous steps to convert this potential into better services and financial advantages. With a strong integration of biomedical and healthcare data, modern healthcare organizations can possibly revolutionize the medical therapies and personalized medicine

13.APPENDIX

Source code

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
body{
  font-family: Calibri, Times New Roman, sans-serif;
  background-color: #EE2710;
```

```
}
.container {
  padding: 50px;
  background-color: #F7F94E;
}
input[type=text], input[type=password], textarea {
  width: 100%;
  padding: 15px;
  margin: 5px 0 22px 0;
  display: inline-block;
border: none;
  background: #f1f1f1;
}
input[type=text]:focus, input[type=password]:focus {
  background-color: orange;
  outline: none;
}
div {
  padding: 10px 0;
}
hr {
  border: 1px solid #f1f1f1;
  margin-bottom: 25px;
}
.registerbtn {
  background-color: #323306 ;
  color: white;
  padding: 16px 20px;
  margin: 8px 0;
  border: none;
  cursor: pointer;
  width: 100%;
  opacity: 0.9;
}
.registerbtn:hover {
  opacity: 1;
}
</style>
</head>
<body>
<form>
```

```

<div class="container">
  <center> <h1>Registration Form</h1> </center>
  <hr>
  <label> Firstname </label>
<input type="text" name="firstname" placeholder= "Firstname" size="15" required />
<label> Middlename: </label>
<input type="text" name="middlename" placeholder="Middlename" size="15" required />
<label> Lastname: </label>
<input type="text" name="lastname" placeholder="Lastname" size="15"required />
<div>
<label>
Gender :
</label><br>
<input type="radio" value="Male" name="gender" checked > Male
<input type="radio" value="Female" name="gender"> Female
<input type="radio" value="Other" name="gender"> Other
</div>
phone:
</label>
<input type="text" name="country code" placeholder="Country Code" value="+91" size="2"/>
<input type="text" name="phone" placeholder="phone no." size="10"/ required>
Current Address :
<textarea cols="80" rows="5" placeholder="Current Address" value="address" required>
</textarea>
<label for="Patient ID"><b>Patient ID</b></label>
<input type="text" placeholder="Patient ID" name="Patient" required>
<label for="administration No"><b>Administration No</b></label>
<input type="text" placeholder="administration No" name="Administration No" required>
  <button type="submit" class="registerbtn">Register</button>
</form>
</body>
</html>

```

source code :2

```

%matplotlib inline
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns sns.set(style="darkgrid")
We'll import pandas to work wi
def plot_with_std(x, y, stds, ax, title, y_label):
    ax.fill_between(x, y - stds, y + stds, alpha=0.2)

```

```

    plot(x, y, ax, title, y_label)
fig, (ax1, ax2) = plt.subplots(ncols=2)
title = 'Increase in mean and std Fortune 500 company %s from 1955 to 2005'
stds1 = group_by_year.std().profit.values
stds2 = group_by_year.std().revenue.values
plot_with_std(x, y1.values, stds1, ax1, title % 'profits', 'Profit (millions)')
plot_with_std(x, y2.values, stds2, ax2, title % 'revenues', 'Revenue (millions)')
fig.set_size_inches(14, 4)
fig.tight_layout()
group_by_year = df.loc[:, ['year', 'revenue', 'profit']].groupby('year')
avgs = group_by_year.mean()
x = avgs.index
y1 = avgs.profit
def plot(x, y, ax, title, y_label):
    ax.set_title(title)
    ax.set_ylabel(y_label)
    ax.plot(x, y)
    ax.margins(x=0, y=0)
ax = plt.subplots()
plot(x, y1, ax, 'Increase in mean Fortune 500 company profits from 1955 to 2005', 'Profit
(millions)')

```

GITHUB LINK: <https://github.com/IBM-EPBL/IBM-Project-40563-1660631423>

PROJECT DEMO LINK:

