

Project Design Phase-I

Proposed Solution

Date	26 September 2023
Project Name	COVID-19 ANALYSIS

Proposed Solution Template:

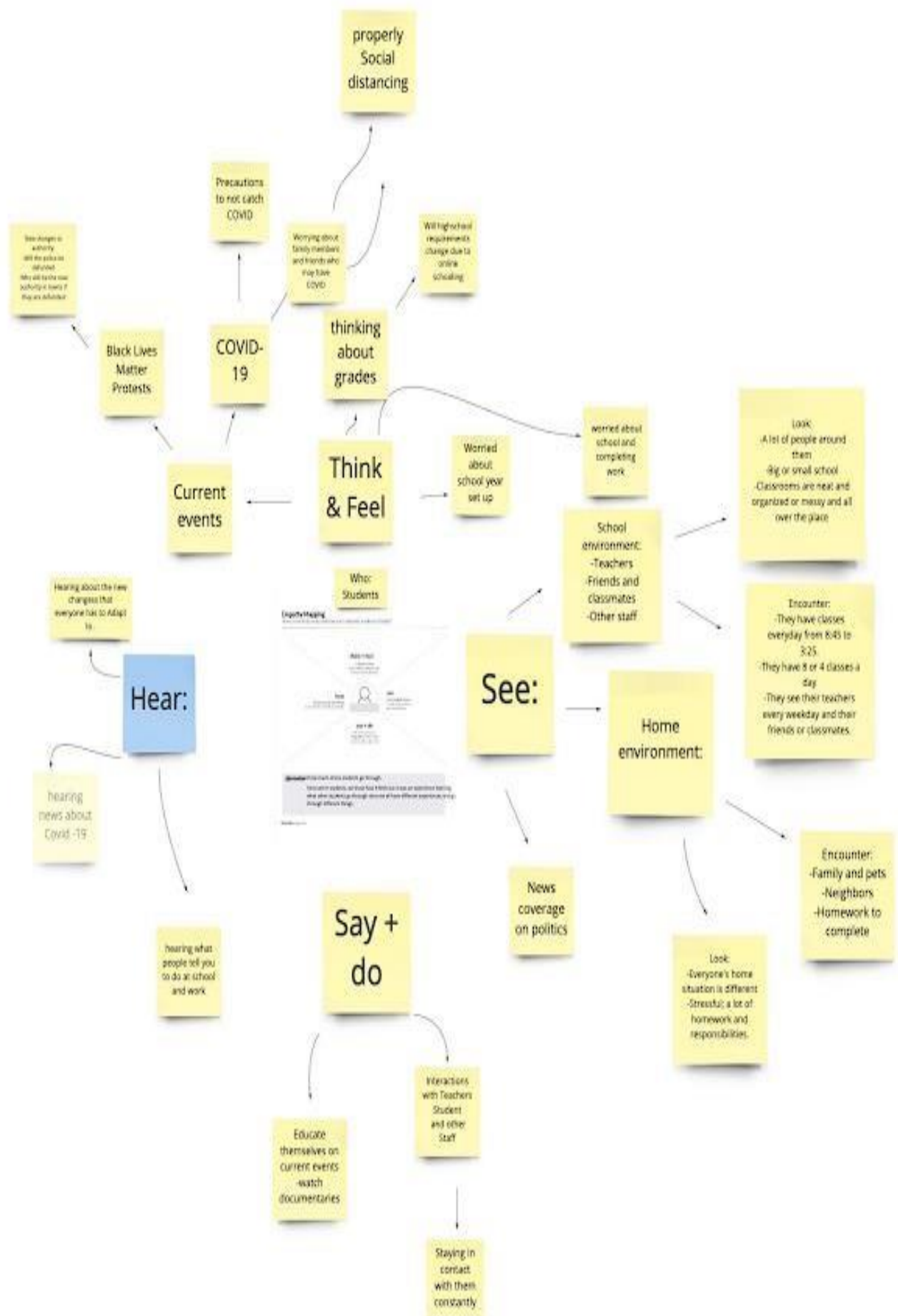
Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none">To examine the COVID-19 cases and deaths data in the EU/EEA region, specifically aiming to compare and contrast the mean values and standard deviations of daily cases and associated deaths. This analysis aims to provide actionable insights to understand the dynamics of the pandemic, identify potential hotspots, and support informed decision-making at local and regional levels.
2.	Idea / Solution description	<ul style="list-style-type: none">COVID-19 analysis is to develop a predictive model that uses various data sources such as infection rates, vaccination rates, and demographic information to forecast COVID-19 hotspots and potential surgesAnother solution could involve leveraging machine learning to analyze medical records and clinical data to identify early indicators of severe COVID-19 cases, allowing for timely medical intervention and potentially saving lives

3.	Novelty / Uniqueness	<ul style="list-style-type: none"> The novelty or uniqueness of COVID-19 is its status as a previously unseen and highly contagious respiratory virus caused by the novel coronavirus SARS-CoV-2, leading to a global pandemic with significant health, social, and economic impacts
4.	Social Impact	<ul style="list-style-type: none"> The social impact of COVID-19 prediction refers to the assessment of how accurately forecasting the spread and impact of the virus can help communities, governments, and healthcare systems prepare for and mitigate its societal consequences, such as healthcare resource allocation, economic planning, and public health measures.
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> The revenue model for COVID-19 analysis involves generating income by providing data services, software solutions, and consulting services for pandemic management. Income is derived from subscription fees, software licenses, and service contracts while maintaining data security and privacy.
6.	Scalability of the Solution	<ul style="list-style-type: none"> Scalability of the COVID-19 analysis solution refers to its ability to expand and adapt efficiently to handle increased data, users, and demands without significant disruptions or loss of performance.

Empathy map

An empathy map for COVID-19



Ideation Phase

Brainstorm & Idea Prioritization

Date	26 September2023
Project Name	Data Analytics for COVID–19 analysis

Brainstorm & Idea Prioritization Template:

Utilizing data analytics for COVID-19 involves collecting, processing, and analyzing large volumes of pandemic-related data to gain insights into infection patterns, vaccination rates, healthcare resource allocation, and the impact of public health interventions. This data-driven approach helps inform decision-making, monitor the virus's spread, and develop effective strategies for combating the pandemic.

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

○ Define Your problem statement:

Utilizing data analytics for COVID-19 involves collecting, processing, and analyzing large volumes of pandemic-related data to gain insights into infection patterns, vaccination rates, healthcare resource allocation, and the impact of public health interventions. This datadriven approach helps inform decision-making, monitor the virus's spread, and develop effective strategies for combating the pandemic

○ Key rules of Brainstroming:

it's important to follow certain key rules to ensure a productive and effective process

- Define Clear Objectives
- Gather Relevant Data
- Data Cleaning
- Data Privacy and Ethics
- Involve Domain Experts

Step-2: Idea Prioritization :

Prioritizing ideas for COVID-19 using data analytics depends on the specific goals and needs of your organization or the public health community. Here are some ideas ranked by priority, considering their potential impact on pandemic response and mitigation.

Steps to follow:

- Vaccine Distribution Optimization
- Epidemiological Modeling
- Variant Analysis
- Vaccine Efficacy Monitoring

Step-3 Conclusion:

Data analytics has been an indispensable ally in our response to COVID-19, offering crucial insights to guide our actions, allocate resources, and inform policy decisions. It has illuminated the path towards informed, evidence-based strategies for managing the pandemic and underscores the importance of data-driven approaches in safeguarding public health.

LITERATURE SURVEY

S.NO	YEAR	AUTHOR	TITLE	RESOURCES	FINDINGS
01	2021	Anika Bhardwaj, N. Natarajan	Covid-19 Data Analysis using Machine Learning	IEEE	<i>An examination of COVID19 records to determine which age groups are the most affected by the virus. Various Machine learning is used to develop predictive model. Algorithms as well as their related performance data are calculated and analysed. Regressor Random Forest and Random Forest The classification algorithm beat all other machine learning algorithm.</i>
02	2020	Yixiao Ma; Zixuan xu; Ziwei Wu.	COVID-19 Spreading Prediction with Enhanced SEIR Model	IEEE	<i>The eSEIR model incorporates an optimization method to calculate β and γ parameters. Our proposed model is verified using the epidemic data in Italy and China with reduced RMSE (root mean square error) of the predicted curves, and is used to predict the potential epidemic progress in the United States.</i>

03	2021	Saud Shaikh, Jaini Gala, Sunny Advani	Analysis and Prediction of COVID-19 using Regression Models and Time Series Forecasting.	IEEE	<i>The model is predicting the number of confirmed, recovered, and death cases based on the data available from March 12 to October 31,2020. For forecasting the future trend of these cases, we are utilizing the time series</i>
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					<i>forecasting approach of tableau. Furthermore, the time series forecasting method is being employed to forecast the total count of confirmed cases in the future.</i>
04	2022	Noopur Khare, Meenakshi Jha, Runjhun Mathur	Data Analysis for COVID-19	IEEE	<i>Data analysis methods which are used are Exploratory Data Analysis (EDA) in which the number of confirmed cases, death, and recovered data are recorded,model like Susceptible-ExposedInfectious-Recovered (SEIR) model is used to predict the time and the rate taken for the spreading up of disease throughout the globe. A statistical model can also be used to compare the data among different countries to make humans aware of the infection.</i>

05	2023	Ye Xia, Peiyu Zhu, Zhe Zhou	Analysis And Prediction of COVID-19 Based on Machine Learning	Research gate	<i>The pandemic, which started with COVID19, has had a terrible impact on world society and placed a significant load on the most developed healthcare systems globally. However, given the current exponential and rapid development in the number of patients, it is essential to make use of AI technology to quickly and accurately estimate the</i>
					<i>prognosis of infected individuals.</i>