Project Title: Efficient water quality analysis and prediction using Machine Learning

**Project Design Phase-I - Solution Fit Team ID: PNT2022TMID08775** 

# 1. CUSTOMER SEGMENT(S)

people who were taking water from unprotected wells and springs. People who were collecting untreated surface water from lakes, ponds, rivers and streams. people who were living in low-income, informal or illegal settlements usually have less access to improved sources of drinkingwater than other residents

### 6. CUSTOMER CONSTRAINTS

- Water makes up about 70% of the earth's surface and is one of the most important sources vital to sustaining life. Rapid urbanization and industrialization have led to a deterioration of water quality at an alarming rate, resulting in harrowing diseases.
- Most of the research either employed manual lab analysis, not estimating the water quality index standard, or used too many parameters to be efficient enough.

### 5. AVAILABLE SOLUTIONS

- we need to train the datasets to run smoothly and see an incremental improvement in the prediction rate using Random Forest Regression algorithm on our dataset.
- We will be building a web application that is integrated to the model built. A UI is provided for the uses where he has to enter the values for predictions. The enter values are given to the saved model and prediction is showcased on the UI.

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## 2. JOBS-TO-BE-DONE / PROBLEMS

- Water quality has been conventionally estimated through expensive and time-consuming lab and statistical analyses, which render the contemporary notion of real-time monitoring moot
- Thus, we use (ML) model to Predict Water Quality by considering all water quality standard indicators.
- User can be benefited by testing the water whether is safe to drink or not using the app.

### 9. PROBLEM ROOT CAUSE

Rapid urbanization and

deterioration of water quality at an alarming rate, resulting in harrowing diseases. Water quality has been conventionally estimated through expensive and timeconsuming lab and statistical analyses, which render the contemporary notion of real-time monitoring moot.

### 7. BEHAVIOUR

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### 3. TRIGGERS

- User can be benefited by testing the water whether is safe to drink or not using the app. A web application that is integrated to the model built. A UI is provided for the uses where he has to enter the values for predictions. The enter values are given to the saved model and prediction is showcased on the UI and deploy it on IBM cloud.
- We can sell it for the prediction of water in various environments if the model preforms well, also can make the app as

### 10. YOUR SOLUTION

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- With machine learning techniques, the implementation was done by the Water Quality Index (WQI) which is a single numeric index that mirrors the overall quality of water with high accuracy.
- The heart of the project depends upon the prediction of the quality of the water. As abundant as algorithms are present in order to achieve such a goal, it is mandatory to select the best and the most efficient algorithm to finalize the predicted value.
- Web app is developed as UI is provided for the user where he has to enter the values for predictions.

### 8. CHANNELS of BEHAVIOUR

8.1 ONLINE

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8.2 OFFLINE

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