Water Supply Management

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RozgaarRahi Presents

जलदर्पण

Solution to the Water Management in the City

New age solutions to solve water problems

Viewing the Problems

- Leakage in Pipelines

- No data to enable detailed analysis and reporting

- Unequal distribution of water across all wards/regions

OUR SOLUTION

1) **Data Gathering from IOT devices : streaming real-time data**

2) **Data analysis**

3) **ML Model creation**

4) **Decisions/Suggestions giving system**
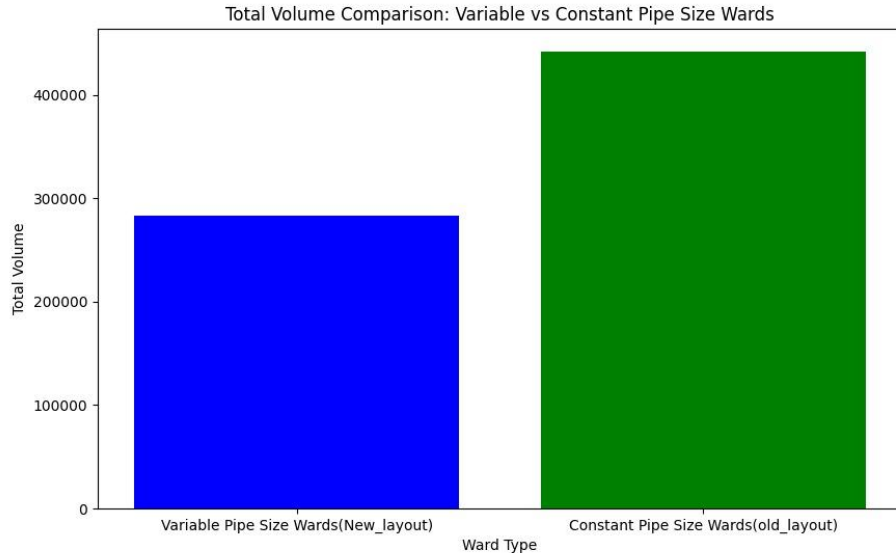
5) **Intuitive Dashboards for better understanding**

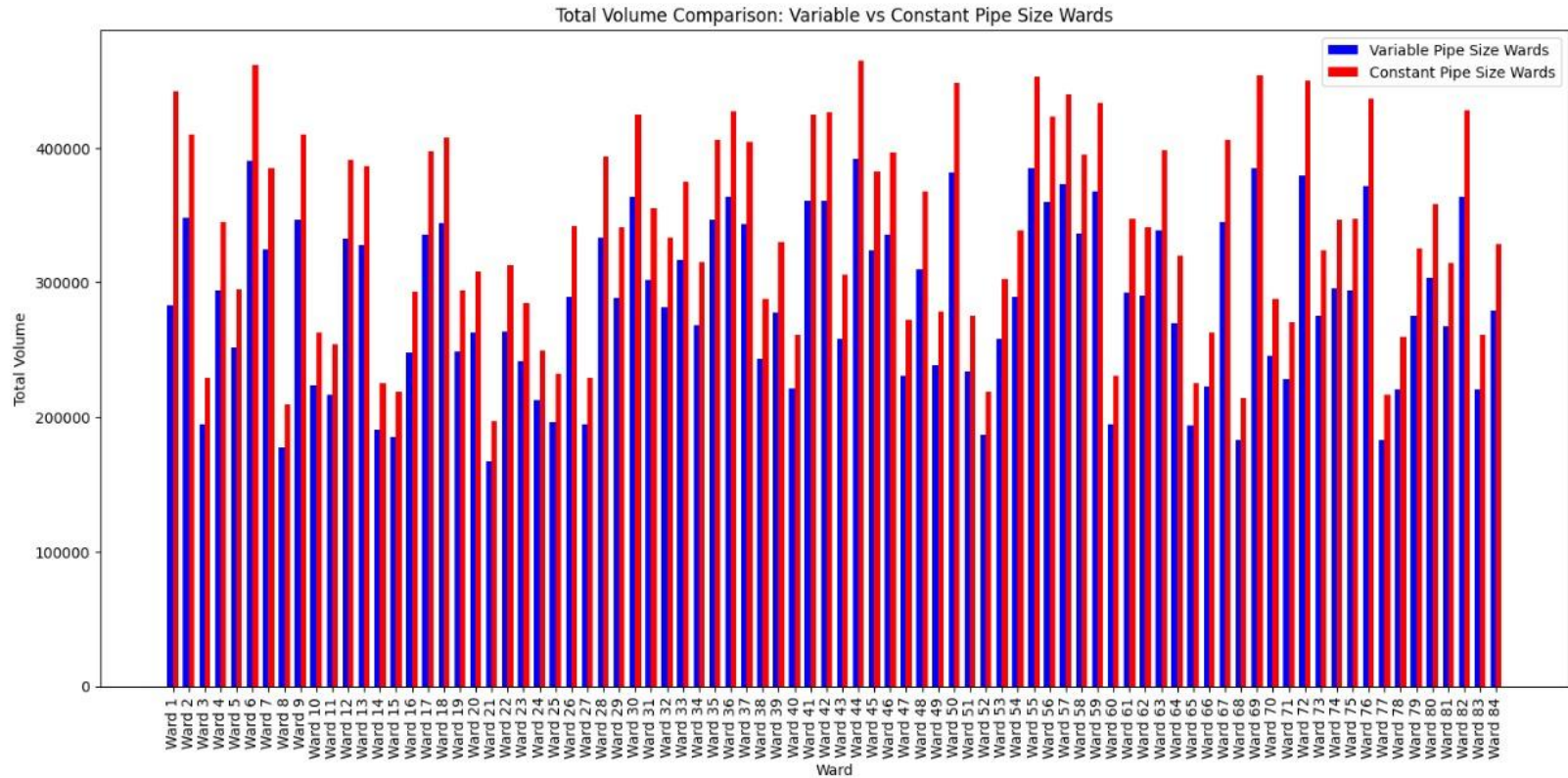# Water Conservation & Equal Distribution

Size of Pipelines as per need

Concept : Currently the size(diameter) of pipelines distributing water in all lines of household in indore are same, varying them as per requirement solves many problems

1. **Water conservation** : saving a large volume of water
2. **Distribution** of water as per needs

Representation of wards receiving more water than the actual requirement, and how it can be balanced just by varying the size of pipelines
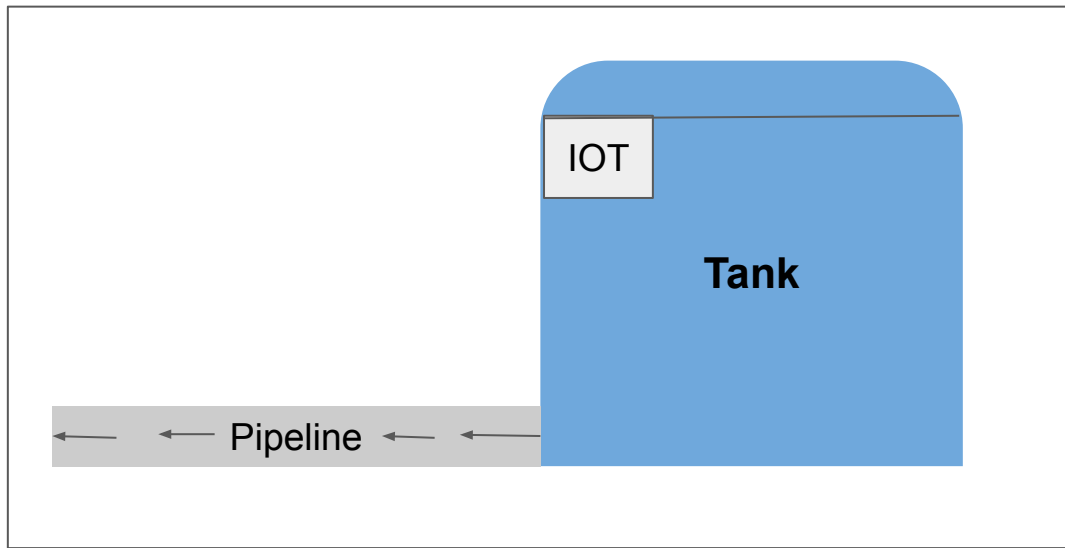
2.

Pipeline Leakage Identification

Self Identification of a leakage in pipeline

Concept : There is a general time taken by the main tanker to get filled & supply water, if the tank get empty sooner, means there is an added supply of water somewhere

Thus, identifying there is leakage in that ward, and thus triggers all the sensors of that ward

IOT

Tank

← Pipeline ←

3.

Identifying the specific location of the leakage ⇨ **Concept :** Using Flow Sensors, we will calculate the flow of 2 points compared to to adjacent sensor data of flow of water.

⇩

Hence that particular pipeline has a potential leakage ⇦ Thus, from the data received from the devices we analyse where is the difference in water inlet and outlet in the pipe

Questions May arise:

1.) What best possible specific Location do we the place sensors?

Ans: Install & setup at Junctions and Intersections, High-Pressure Zones, End of Pipeline Segments, Areas supplying water to hospitals, schools, and other critical infrastructure.

2.) How do we find high pressure zones & location for sensors?

Ans: Using GIS, high-pressure areas in water pipelines are found by mapping the network and looking at elevation differences. This helps to easily spot where pressure might be too high.

GIS Mapping

- **Pipeline Visualization**:
  - **Example**: A digital map showing all pipeline routes and connections.
  - **Explanation**: Helps in visualizing the entire network, making it easier to identify issues and plan upgrades.
- **Aging Infrastructure**:
  - **Example**: Highlighting old or deteriorating pipeline sections on the map.
  - **Explanation**: Prioritizes maintenance and replacement of aging infrastructure.

SCALING USING AZURE CLOUD MONITORING SYSTEM

1.) Setup the whole Infra in Azure Cloud. Templates creation using terraform to have services ready.
2.) Using Azure IOT Monitoring System to monitor the Real-time data streamed from IOT Devices. One stop solution to manage all the sensors and devices.
3.) Performing Data Analysis using Synapse Analytics & ADF
4.) Quality ML Model Creation Using Databricks.
5.) Returning the Decision, Suggestion, Insights using Charts, ultimately report in Power BI.

Real-Time Monitoring

- **Purpose**: Track water flow, pressure, and quality in real-time.
- **Types of Sensors**: Pressure sensors, flow meters, and leak detectors.

Predictive Analytics and ML

- **Purpose**: Forecast water usage and identify potential issues before they occur.
- **Usage**: Predict future water needs and pipeline requirements based on historical data.

GIS Mapping

- **Purpose**: Visualize pipeline routes, household connections, and infrastructure conditions.
- **Benefits**: Helps in managing and upgrading the pipeline network effectively.

THANK YOU

HACK'NDORE

‹CRACK THE CODE TO DIGITAL INDORE/›