



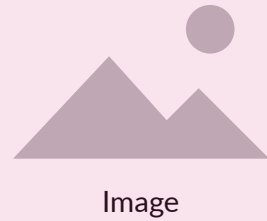
# **WATER QUALITY MONITORING BUOY**

Floating sensors for lakes and ponds

# AGENDA

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- 01** Introduction
  - 02** Literature & Gap
  - 03** Proposed System
  - 04** Implementation
  - 05** Results
  - 06** Conclusion
- 





**Lake water quality testing  
is still handled manually in  
most places – slow, error-  
prone and hard to track.**

Why this project matters

# PROBLEM STATEMENT

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1

## Manual work

Lake water quality testing takes hours of repetitive effort.

2

## Errors

Mistakes creep in and are hard to trace.

3

## No insight

Municipal staff and researchers lack data to make decisions.

# LITERATURE SURVEY

| Study            | Approach               | Limitation         |
|------------------|------------------------|--------------------|
| Study A          | Rule-based automation  | Not adaptive       |
| Study B          | Mobile data collection | No analytics       |
| Commercial tools | Full-featured suites   | Costly and complex |

*Representative summaries — replace with your own citations.*

# SYSTEM ARCHITECTURE

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**01**

## **Input**

Data captured from users  
or sensors

**02**

## **Process**

Core logic validates and  
analyses

**03**

## **Store**

Secure database and  
backups

**04**

## **Output**

Dashboard, alerts and  
reports

# BLOCK DIAGRAM

**Every module talks through one simple, testable interface.**

The system is built in layers: an input layer, a processing service, a database and a dashboard. Each layer can be tested independently, which keeps water quality monitoring buoy simple to maintain and extend.



Block diagram / flowchart

# TECHNOLOGY STACK

1

**pH & TDS sensors**

Water chemistry

2

**Arduino**

Controller

3

**LoRa**

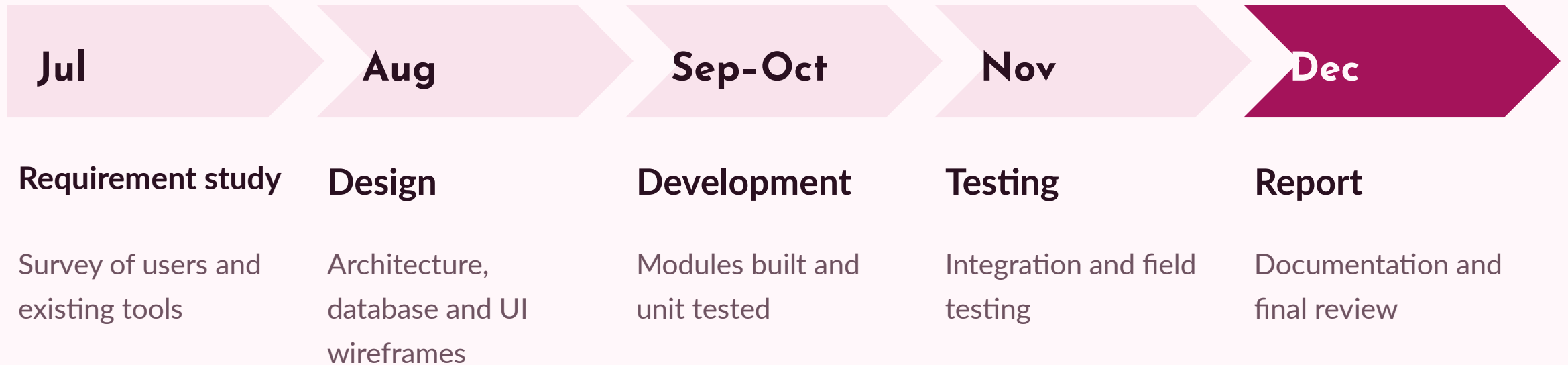
Long-range radio

4

**Web map**

Live readings

# PROJECT TIMELINE



# IMPLEMENTATION SNAPSHOTS

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Image 1

## Main dashboard

Overview of live data



Image 2

## Data entry

Simple forms with validation

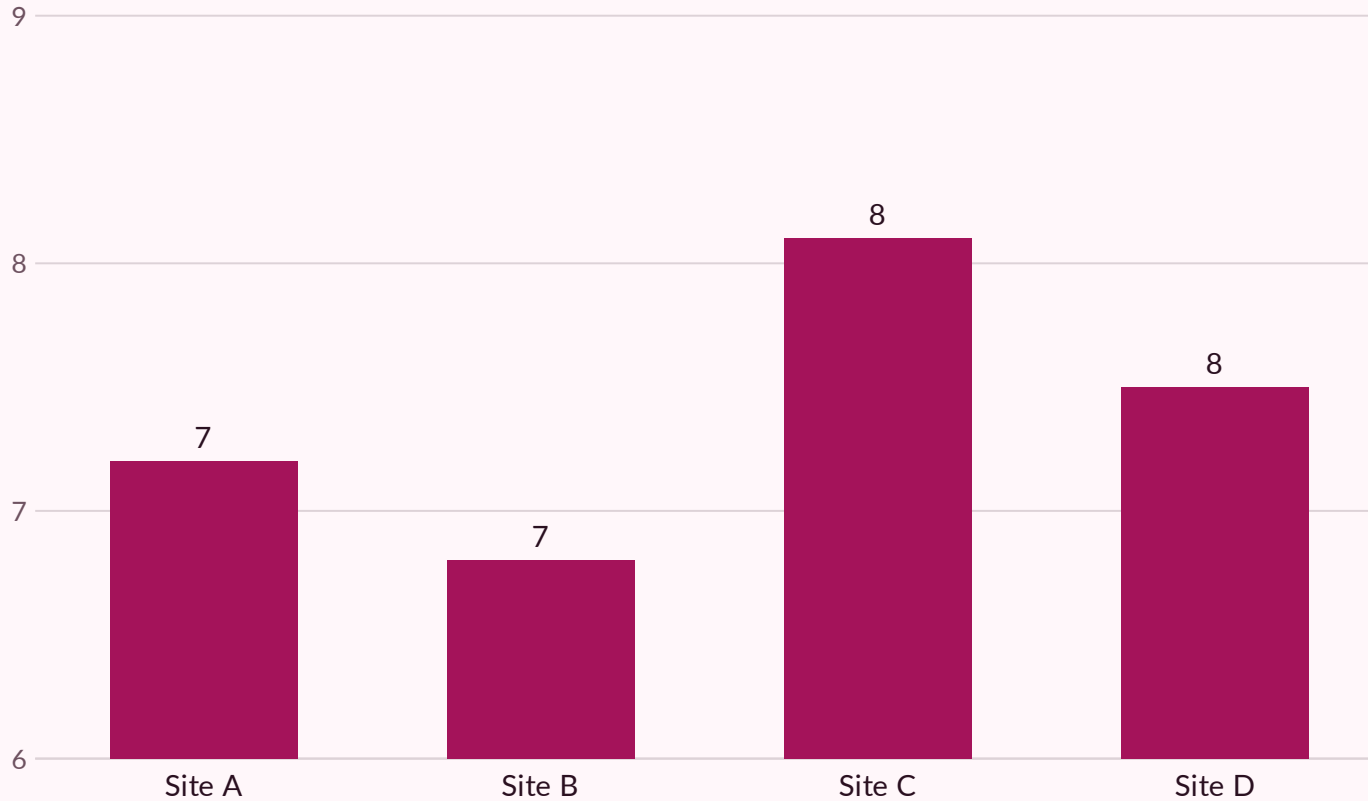


Image 3

## Reports

Exportable summaries

# RESULTS



*Sample data for illustration — replace with your own figures.*

## 24/7

continuous monitoring

The prototype improved steadily over the evaluation period (sample data).

# KEY OUTCOMES

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**24/7**

continuous monitoring

**100%**

records digitised

**< 1 s**

average response

*Figures from our test setup (sample data).*

# CONCLUSION

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- ▶ Water Quality Monitoring Buoy meets its main objectives
- ▶ Automation saves time and reduces errors for municipal staff and researchers
- ▶ The design is simple to extend and maintain



Image

# FUTURE SCOPE

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1

## Mobile app

Native apps for Android and iOS

2

## AI insights

Predictions from historical data

3

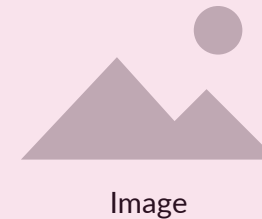
## Scale-up

Deploy across more sites

# REFERENCES

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- ▶ [1] A. Author, “Title of the paper,” Journal Name, vol. 12, pp. 1–10, 2023.
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# THANK YOU

Questions and suggestions are welcome.

Aarav Sharma • Diya Patel  
Dept. of Civil Engineering

