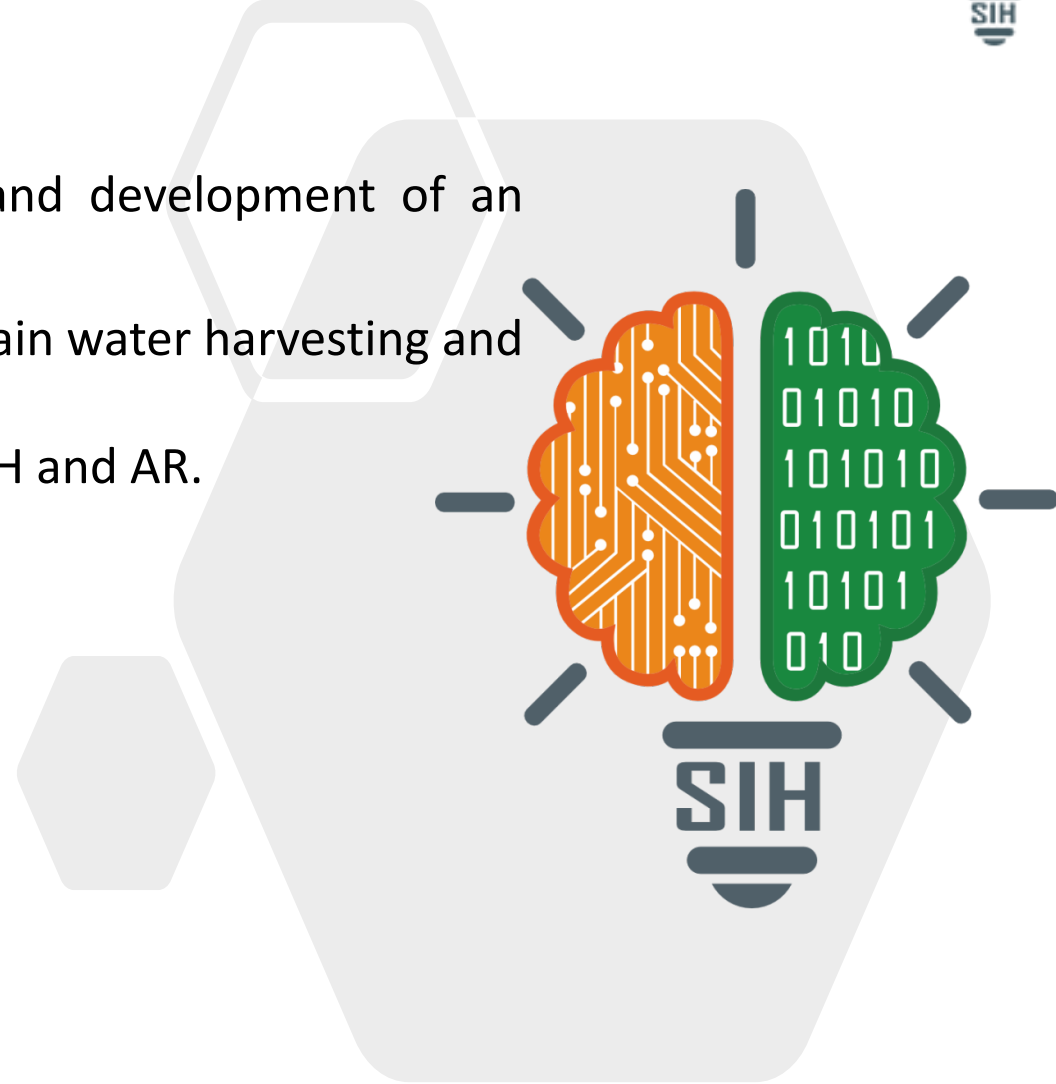


SMART INDIA HACKATHON 2025



- **Problem Statement ID – 25065**
- **Problem Statement Title-** Designing and development of an application for on spot assessment of Roof Top Rain water harvesting and artificial recharge potential and size of the RTRWH and AR.
- **Theme- Smart Automation**
- **PS Category- Software**
- **Team ID- HackSmith**
- **Team Name - HackSmith**





Proposed Solution:

- Mobile/web app for **instant RTRWH assessment**.
- **Google Earth rooftop mapping + local rainfall data** integration.
- Auto-calculates **harvest capacity, tank size & recharge structures**.
- **Geo-tagged, timestamped & shareable PDF reports** for users/authorities.

Innovation & Uniqueness:

- First tool combining **GIS rooftop mapping with rainfall datasets**.
- **On-spot, reliable results** → no manual surveys needed.
- **Scalable** for households, institutions & government audits.

TECHNICAL APPROACH



Aspect

Details

Tech Stack

Frontend: React.js

Backend: Node.js

DB: MongoDB (optional)

Libraries: jsPDF, Leaflet.js/Google Earth Pro

Data Sources

Rainfall: IMD / OpenWeatherMap

Rooftop: Google Earth / OSM

Process

1. User selects roof area

2. Fetch rainfall data

3. Apply $V = A \times R \times C$

4. Output: water volume, tank size, recharge pit

5. Generate geo-tagged PDF report

Feasibility:

- Prototype possible in **2 days** with manual rooftop input + rainfall dataset.
- Scalable with **GIS/ML-based rooftop detection** in future.

Viability:

- **Low-cost, scalable solution** for households & govt. audits.
- Promotes **water conservation & urban sustainability**.
- Aligns with **Smart City & Jal Shakti initiatives**.
- Potential for **subscription model / govt. adoption** for large-scale surveys.

Potential Impact:

- Enables **citizens & authorities** to instantly know RWH feasibility.
- Helps **urban planning bodies** enforce rainwater harvesting regulations.

Benefits:

- **Social:** Empowers households to adopt RWH.
- **Environmental:** Reduces groundwater stress, improves recharge.
- **Economic:** Cuts water bills; scalable to city-level planning.
- **Government:** Fast, data-driven audits without manual surveys.

- IMD Rainfall Data Portal: imd.gov.in
- OpenWeatherMap API: openweathermap.org/api
- Research Paper: *Estimation of Rooftop Rainwater Harvesting Potential using Google Earth Pro & GIS*
- Google Earth Pro Rooftop Digitization: earth.google.com
- Ministry of Jal Shakti Guidelines on RWH

WORKING FLOWCHART

