SMART INDIA HACKATHON 2025

- **Problem Statement ID – SIH25135**
- **Problem Statement Title- Student Innovation**
- **Theme- Smart resource automation**
- **PS Category- Software**
- **Team ID- 3**
- **Team Name (Registered on portal):-TechNOmads**

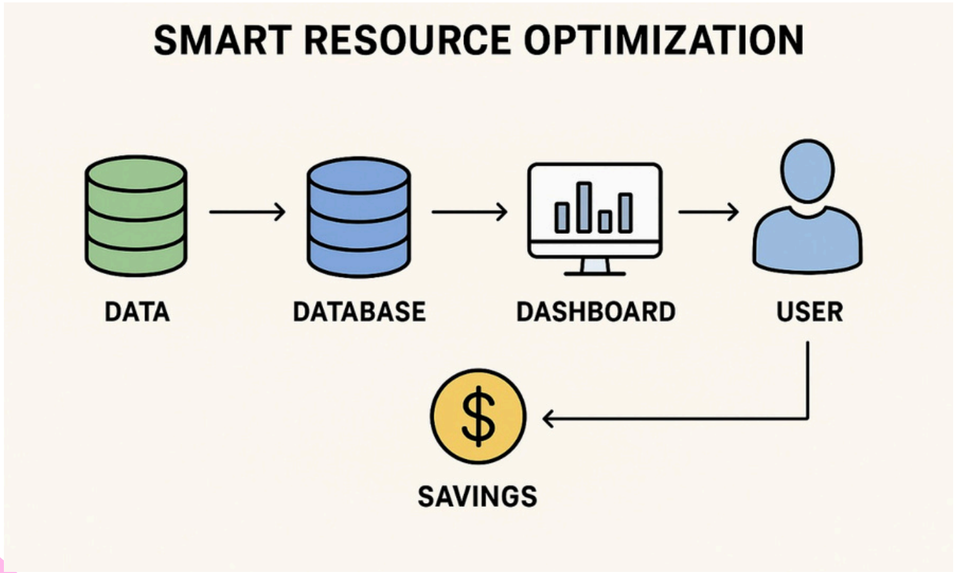
TechNOmads

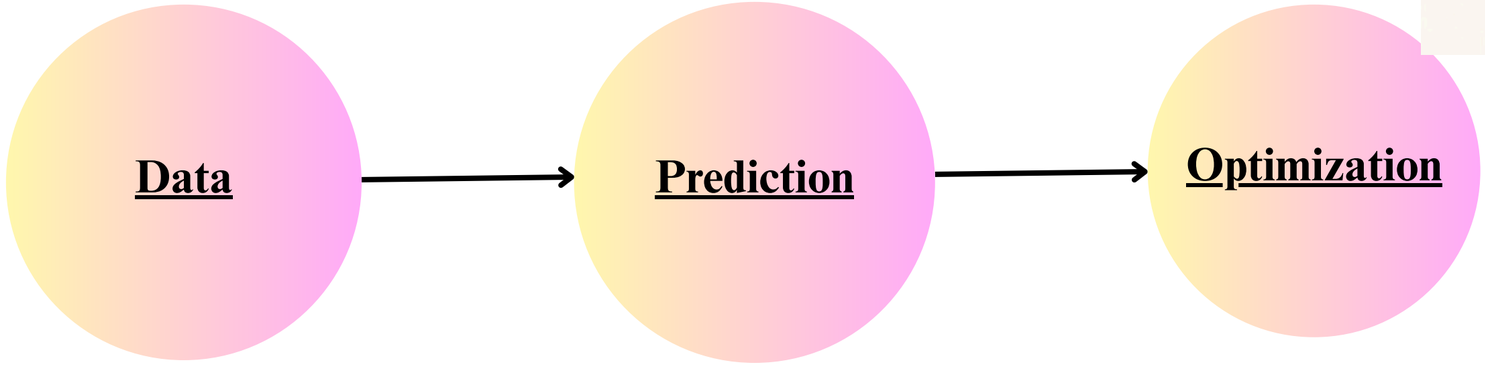
EcoTrac

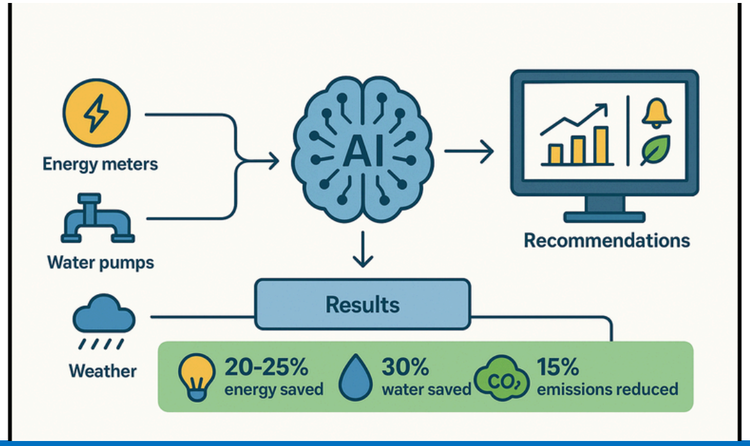
SMART INDIA HACKATHON 2025

- ## Smart Resource Optimization:

  - Combines energy & weather data for efficient resource use
  - Predicts high-demand days (e.g., heatwaves) for planning
  - Suggests actions like “Shift irrigation to evening”
  - Saves 15-20% energy, 25% water, and reduces emissions by 18%







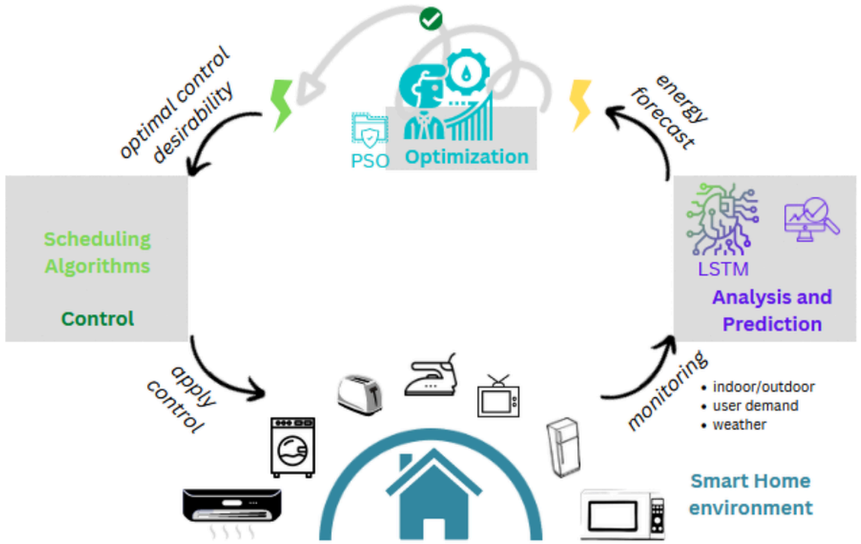
TechNOmads

TECHNICAL APPROACH

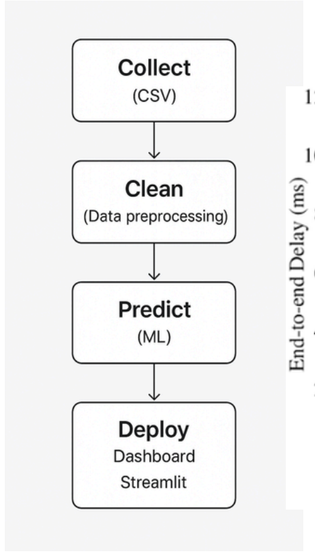
SMART INDIA HACKATHON 2025

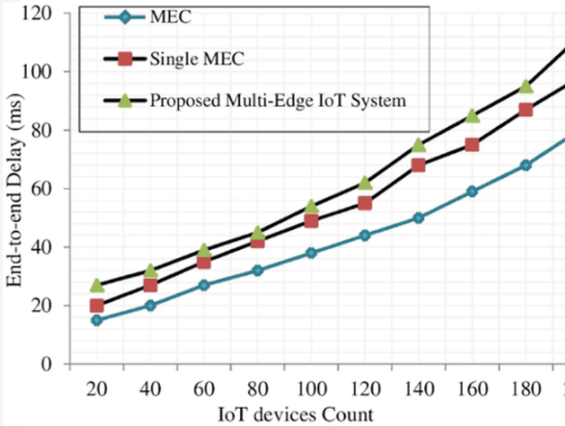
Technologies

- **Python**
- **Pandas, Scikit-learn**
- **Streamlit, PostgreSQL**



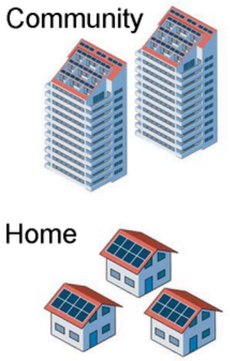
Flowchart

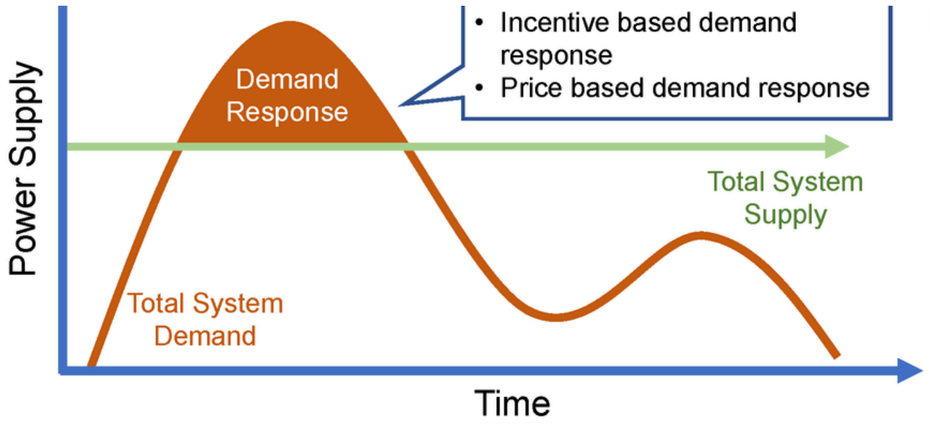


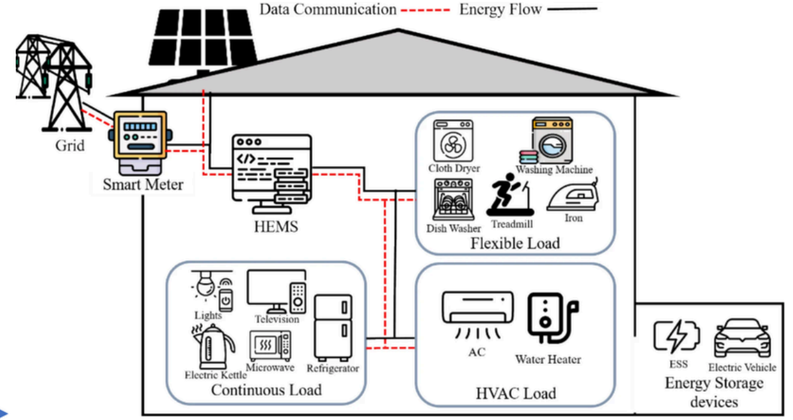


Methodology

- **Steps: Collect → Clean → Predict → Deploy**
- **Flow: CSV → ML → Dashboard**
- **Prototype: Streamlit app**







TechNOmads

FEASIBILITY AND VIABILITY

SMART INDIA HACKATHON 2025

TECHNICAL	ECONOMIC	OPERATIONAL	MARKET	OVERALL
Uses open-source PostgreSQL	Free datasets (data.gov.in, IMD)	Simple Streamlit UI with Hindi support	High rural demand (70% farmers)	Very feasible (8/10)
Python	low-cost cloud (~₹5,000/month)	aligns with India's green goals	unique crop-weather focus vs. urban apps	quick demo
Pandas	15-20% user savings	pilot-ready.		calable
Streamlit				sustainable
scikit-learn				
prototype in 6 weeks				

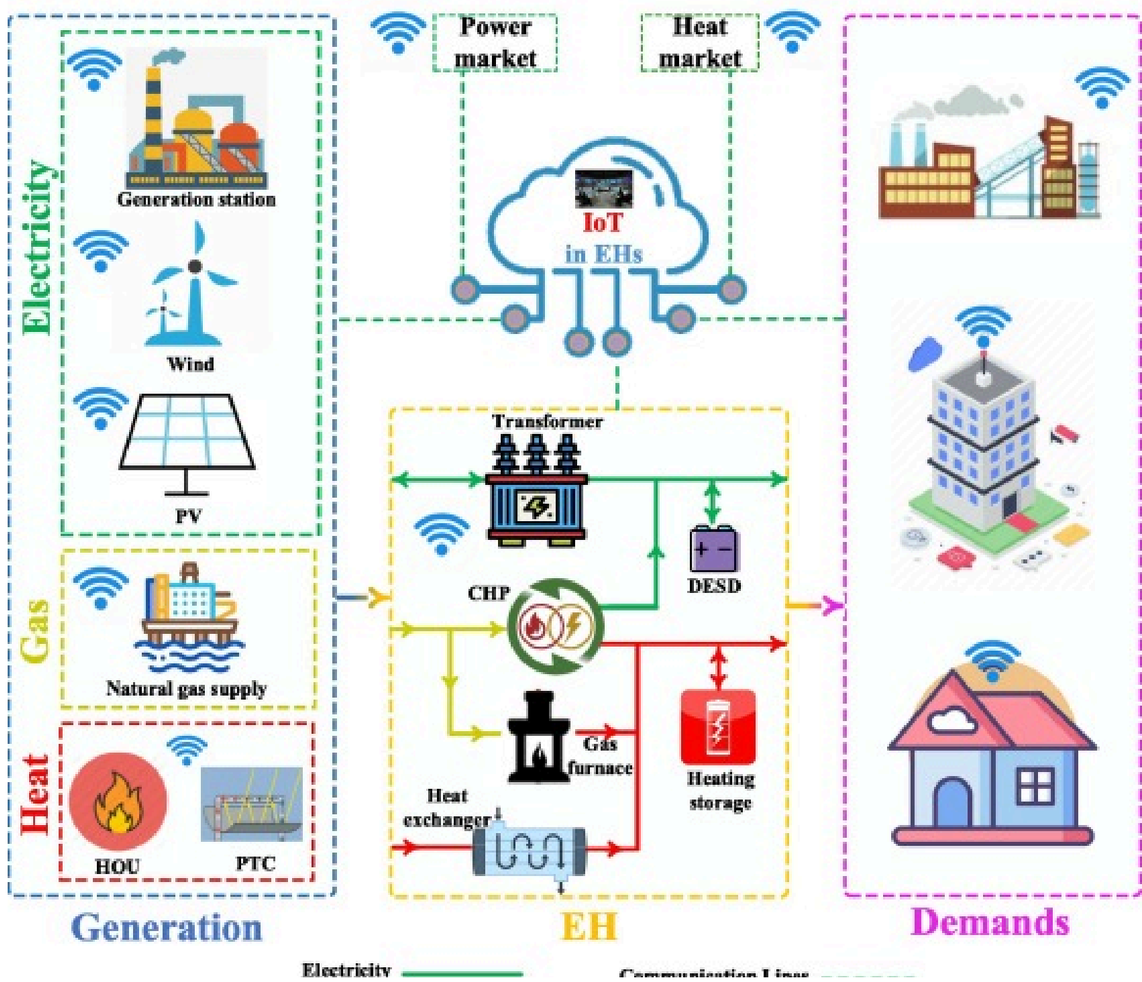
TechNOmads

IMPACT AND BENEFITS

SMART INDIA HACKATHON 2025

- ***Households :*** Save 50-70 kWh/month
- ***Farmers :*** Reduce 200-300 liters/day of water
- ***Environment*** : 18% lower carbon footprint
- ***Gamified :*** Green points for sustainable choices

Savings → **Sustainability**



TechNOmads

RESEARCH AND REFERENCES

SMART INDIA HACKATHON 2025

- ***Links***

- **Artificial Intelligence Integration Driven Smart Grid Alternative Transforming the Future With Renewable, and Non-renewable Energy Sources**

  Research Paper on AI & Smart Grids

- **Optimizing renewable energy systems through artificial intelligence: Review and future prospects**

  Sustainable Energy Policies and Practices

- **AI-driven solutions in renewable energy: A review of data science applications in solar and wind energy optimization**

  AI-driven solutions in renewable energy

- **Prototype Link**

  https://smart-resource-dashboard.netlify.app