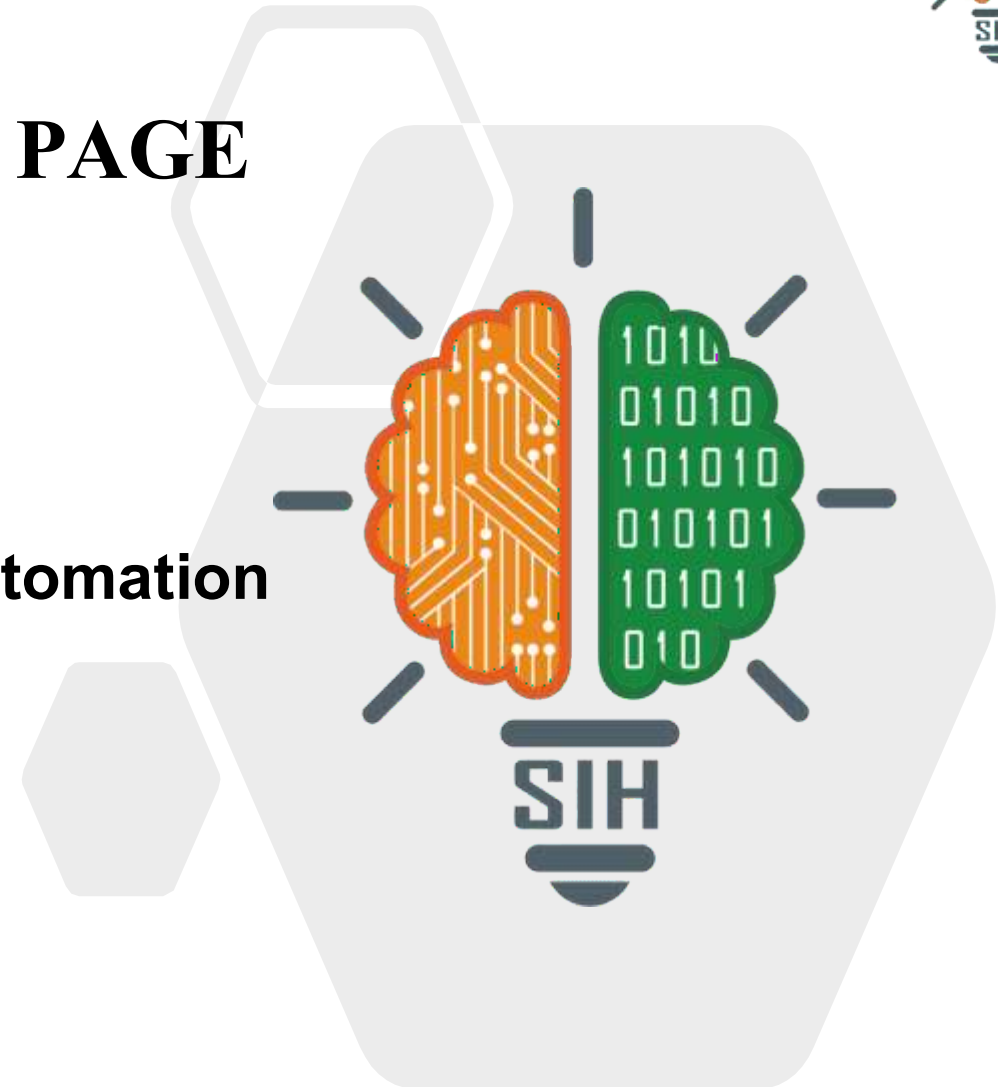# SMART INDIA HACKATHON 2024

TITLE PAGE

- Problem Statement ID –1540

- Problem Statement Title-smart automation

- Theme-Smart Energy Meter

- PS Category- Software$Hardware

- Team ID-206

- Team Name (Registered on portal)

SMART GSM-BASED ENERGY METERING AND BILLING SYSTEM

SMART INDIA HACKATHON 2024

❖ **Proposed Solution:"Smart Energy Management System" (SEMS)**

- **Detailed explanation of the proposed solution**
  - ➤ The Smart Energy Billing Meter is installed at the consumer's premises, replacing traditional mechanical meters.
  - ➤ The meter continuously measures and records electricity consumption in real-time, using advanced sensors and IOT technology.
  - ➤ The data is transmitted wirelessly to a central server, eliminating the need for manual meter readings.
  - ➤ The billing software processes the data, applying tariffs and calculating the bill amount based on the consumer's usage patterns.
  - ➤ The generated bill is sent to the consumer via SMS, and will be printed in a paper through a small printer.

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- **How it addresses the problem**
  - ➢ Accurate and Real-time Data
  - ➢ Automated Meter Readings
  - ➢ Enhanced Consumer Engagement
  - ➢ Efficient Billing
  - ➢ Tamper Detection
- **Innovation and uniqueness of the solution**
  - ➢ Real-time Data Analytics
  - ➢ Internet of Things (IOT) Connectivity
  - ➢ Advanced Security Measures
  - ➢ Consumer Engagement Platform
  - ➢ End-to-End Automation
  - ➢ Real-time Energy Management

TECHNICAL APPROACH

- **Technologies to be used:**
  - ➤ Microcontroller-Arduino, GSM Module, Printer, power supply
- **Methodology and process for implementation:**

Read Energy Meter Data

↓

Calculate Bill

↓

Send Billing Info via GSM

↓

Generate Receipt

↓

Print Receipt

FEASIBILITY AND VIABILITY

Feasibility:
- Technical Feasibility
- Economic Feasibility
- Operational Feasibility
- Schedule Feasibility

Viability:
- Technical Viability
- Commercial Viability
- Financial Viability
- Social Viability

IMPACT AND BENEFITS

MAVERICK INNOVATORS

- **IMPACTS:**
- ➢ Environmental Impact
- ➢ Social Impact
- ➢ Technical Impact
- **BENEFITS:**
- ➢ Increased Efficiency
- ➢ Enhanced Security
- ➢ Reduced Paper Waste

RESEARCH AND REFERENCES

- "Smart Energy Metering using GSM and Arduino" by IJERT
- "GSM-Based Smart Energy Meter for Automated Billing" by IEEE
- "Design and Implementation of Smart Energy Meter with GSM and Printer" by IJSRD