iTNT Innovation Challenge

RESOURCE CONSUMPTION REDUCTION

RENWZ - SMART AUTOMATION RENEWED.

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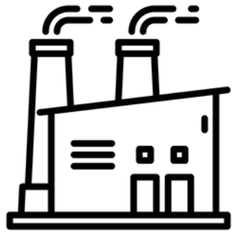
PROBLEM STATEMENT

THE WASTE CRISIS IN MANUFACTURING

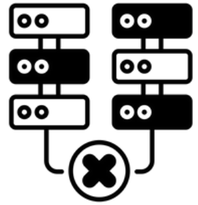
Using resources such as water, energy and raw materials in excess leads to environmental degradation



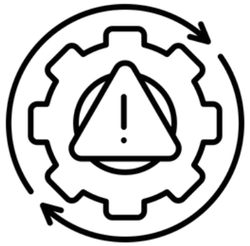
Manufacturing inefficiencies

Lack of transparency

Environmental impact



Disconnected systems



Inefficient Process

Waste Generation

Economic Challenges

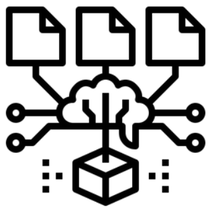
OUR SOLUTION

RENWZ - SMART AUTOMATION RENEWED.

Excessive use of resources like water, energy, and raw materials leads to environmental degradation.

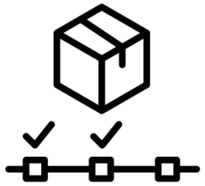
AI-powered IoT platform

IoT devices to transmit energy levels, pressure, temperature etcs and use AI to analyze it



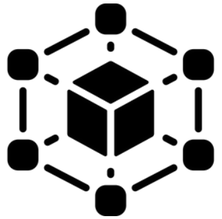
Predictive Analysis

GenAI to give suggestions on how to reduce consumption and ML to predict future consumption patterns



Real-time resource tracking

Tracking real-time resources to identify each part of the process and get suggestions for optimization



Blockchain lifecycle

Blockchain technology to ensure transparency, security and ensure seamless communication

AI Chatbot in Dashboard

AI chatbot which has access to IoT device data and can give suggestions/charts based on the comsumption

HOW IT WORKS

- Smart Sensors: Deploy IoT sensors throughout manufacturing process
- Data Collection: ESP32 modules transmit data to secure IoT Hub
- AI Analysis: Machine learning algorithms process and analyze data
- Optimization: AI suggests real-time improvements and long-term strategies
- Blockchain Tracking: Secure, transparent product lifecycle management
- Reporting: Automated, customizable reports for actionable insights

KEY FEATURES

- **Resource Monitoring**: Track energy, water, and raw material usage in real-time
- **Predictive Maintenance**: AI-driven alerts to prevent breakdowns and inefficiencies
- **Waste Reduction**: Identify and eliminate sources of waste across the production line
- **Recycling Management**: Blockchain-powered tracking of product lifecycle and recycling
- **AI Chatbot**: Instant answers to queries and proactive suggestions
- **Custom Dashboards**: Tailored views for different roles and departments

TECHNICAL APPROACH

Webapp - Dashboard

Next.js

Redux

Webapp dashboard to see overall process and their real-time data equipped with AI help of AI

Webapp fetching data from backend

periodically for monitoring

Services

Backend Service

Express.js

Nodejs

Local server to power up dashboard

AI Model Service

Tensorflow

FastAPI

AI to detect and identify wastage of resource along with suggestion for improvement

Ledger Service

Express.js

Nodejs

Ledger to monitor recycling status of products produced and sold

Database

TimescaleDB

To handle resource-intensive workloads and is good for time series, event, and analytics data

Common local DB to store AI processed data from time-to-time

Block chain

Solidity

Nestjs

Next.js

Metamask

Ethereum

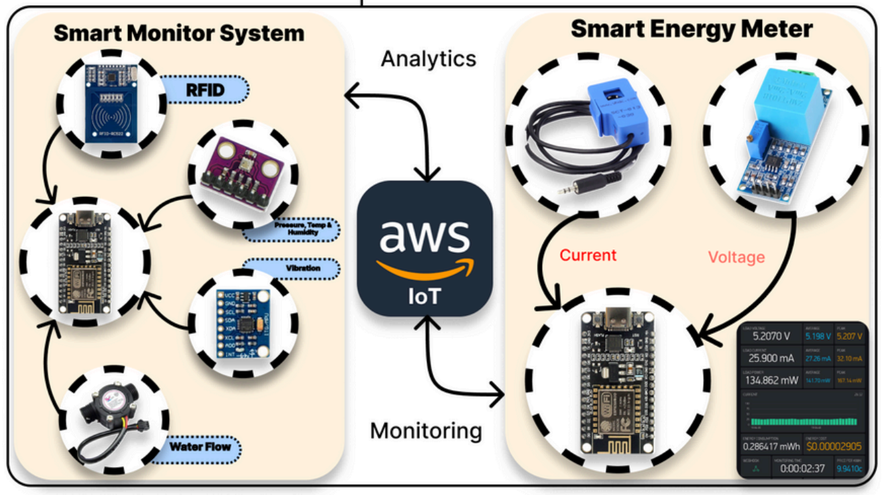
Graphql

Data Ingestion

kafka

Pre-processing data before sending it to model

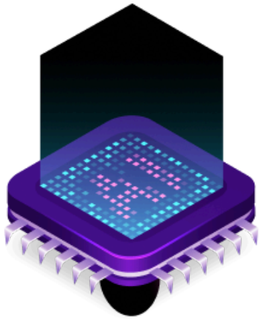
IOT sensor data sent to pipe-line for pre-processing from various locations with various data



FLOW

Manufacturers:

1. Register
2. Add Products
3. See recycle ledger



AI

1. Process Realtime Data
2. Provide suggestion in various aspects
3. Suggest for imporvements that could be made possibly
4. AI Chat bot as helper for admin

IoT devices are fixed on the factory analysis of temperature, pressure and other things etc are measured by these devices realtime and process it

People

1. Register
2. Request for recycle
3. See recycle status of the product via blockchain

IOT Device

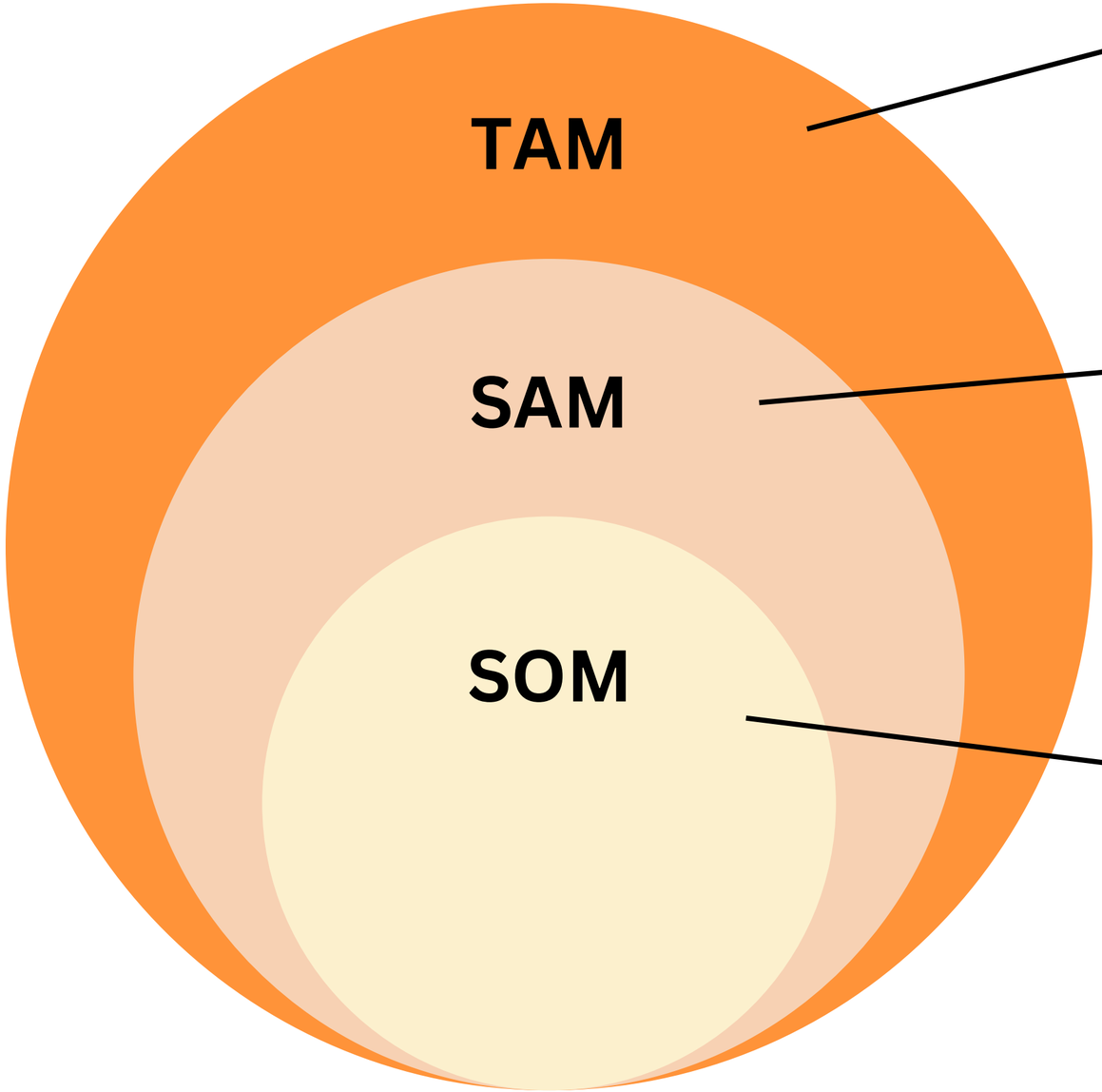
It helps to monitor and process various data within factory

COMPETITIVE ADVANTAGE

- Holistic Solution: Covers entire manufacturing lifecycle, unlike segmented competitors
- AI-Powered Insights: Goes beyond data collection to provide actionable strategies
- Blockchain Integration: Ensures transparency and traceability in recycling processes
- Scalability: Applicable across various manufacturing sectors
- User-Friendly Interface: Accessible insights for all levels of technical expertise
- Continuous Learning: System improves over time with more data

MARKET OPPORTUNITY

- Global smart manufacturing market size: $250 billion by 2025 (CAGR of 12.4%)
- Industrial IoT market to reach $110 billion by 2025
- Sustainability in manufacturing: $10 billion market by 2025
- Regulatory push for sustainable manufacturing in major economies
- Increasing corporate commitments to reduce carbon footprint



Total Addressable Market

Market Segment: Manufacturing sector, including all industries such as automotive, electronics, consumer goods, etc.

Total Market estimate: ₹22 lakh crore

Serviceable Available Market

Market Segment: Industries with a strong focus on digital transformation, Industry 4.0, and sustainability, such as automotive, electronics, and heavy machinery.

Total Market estimate: ₹6.6 lakh crore

Serviceable Obtainable Market

Market Segment: Early adopters of manufacturing optimization solutions, primarily large enterprises and innovative SMEs..

Total Market estimate: ₹1.32 lakh crore

BUSINESS MODEL

- SaaS Subscription: Tiered pricing based on factory size and features
- Hardware Sales: IoT sensors and ESP32 modules for legacy systems
- Installation and Integration Services: On-site setup and system integration
- Consulting Services: Customized efficiency and sustainability strategies
- Data Monetization: Aggregated, anonymized industry insights (opt-in basis)

GO-TO-MARKET STRATEGY

- Initial Focus: Target high-waste industries (textiles, automotive, electronics)
- Partnerships: Collaborate with major IoT hardware providers and cloud services
- Pilot Programs: Offer free trials to industry leaders for case studies and testimonials
- Content Marketing: Webinars, whitepapers on manufacturing efficiency and sustainability
- Industry Events: Showcase at major manufacturing and technology conferences
- Direct Sales: Dedicated team for enterprise-level clients

COMPETITION ANALYSIS

Company	Platform/Product	Revenue	Description
Siemens	MindSphere	1.74 trillion INR	A cloud-based, open IoT operating system focusing on data analytics, predictive maintenance, and operational optimization in manufacturing.
IBM	Watson IoT	373.91 billion INR	AI-powered analytics and IoT solutions for industrial applications, known for predictive maintenance and operational efficiency.
General Electric (GE)	Predix	348.78 billion INR	An industrial IoT platform focusing on asset performance management and operational efficiency, particularly in heavy industries.