AI-Driven O&M Optimization for Solar Portfolios

Transform reactive maintenance into AI driven asset optimization

LTM ENERGY GROUP
MANAGED ENERGY SOLUTIONS

Powered By

asoba

The R800K Problem Per MW, Annually

4–8 Hour Detection Delay

Lost generation during peak hours

72–120 Hour Average MTTR

Extended revenue loss

20–30% False Repair Alerts

Wasted O&M budget

6+ Monitoring Portals

Fragmented decision making

Solar Maintenance Approaches

Reactive

- Responds to unexpected breakdowns
- Leads to unplanned downtime
- Typically incurs higher repair costs
- Can reduce long-term system efficiency

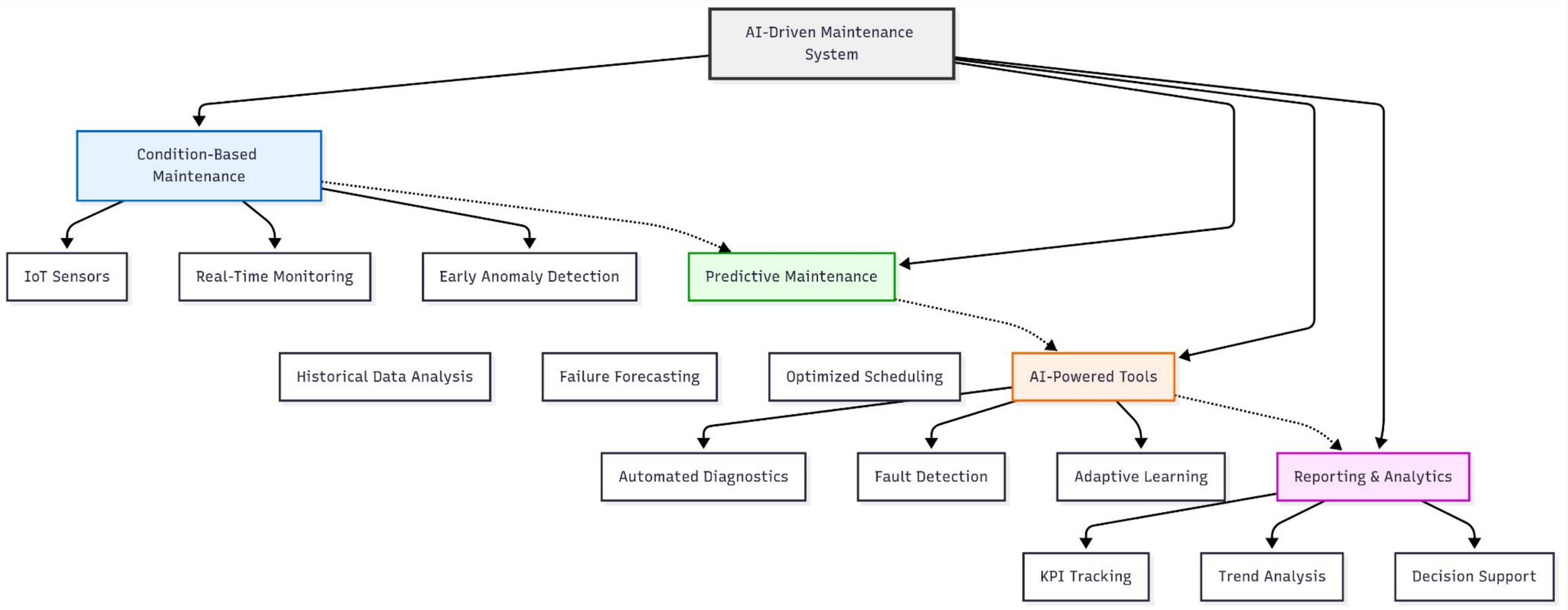
Proactive

- Minimizes downtime through early interventions
- Extends equipment lifespan
- Sustains consistent energy output and efficiency

AI Driven

AI-driven maintenance leverages advanced data analytics, sensors, and machine learning to optimize system reliability and performance.

AI Driven Maintenance

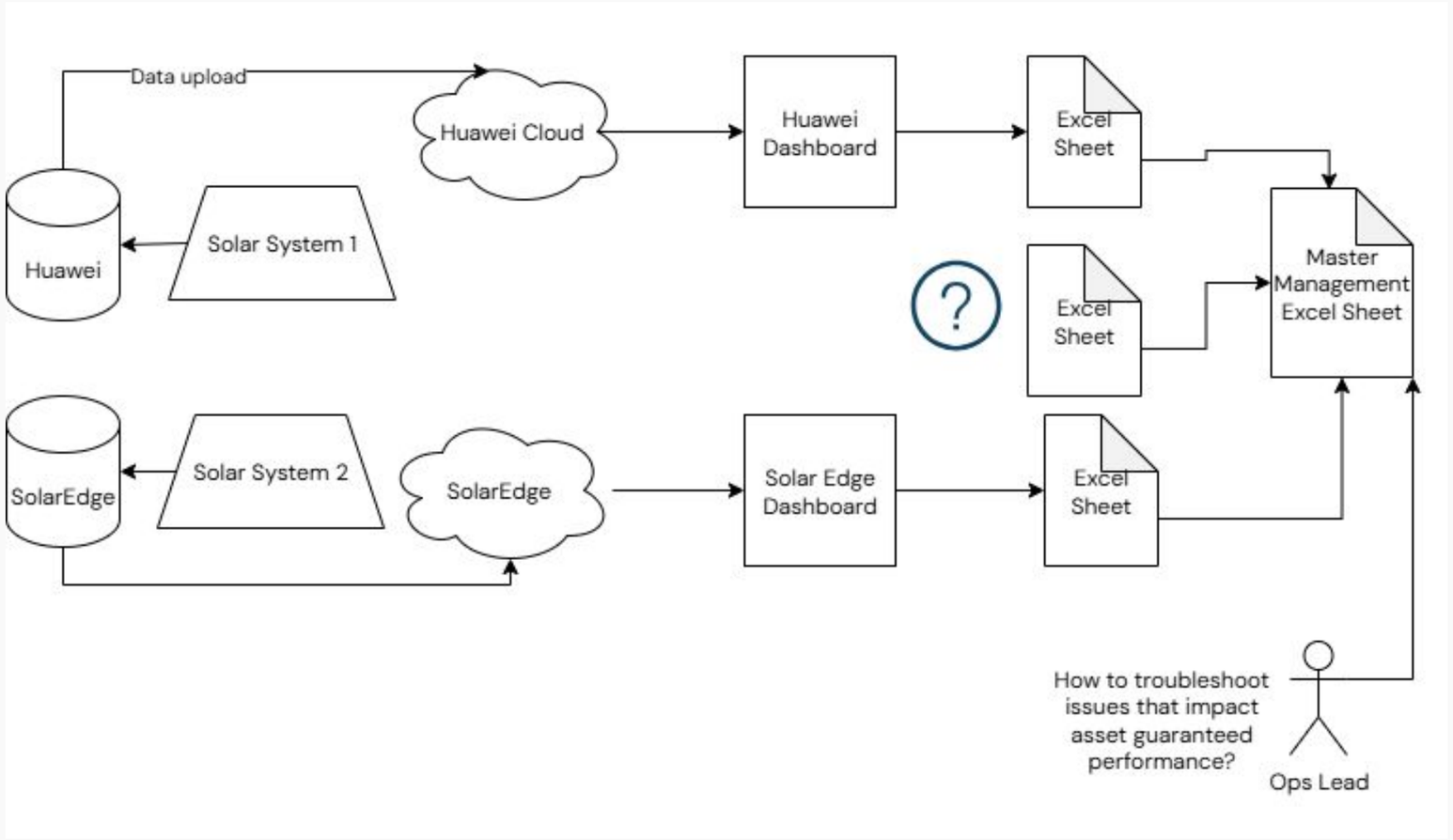


Manual Chaos

What your O&M team deals with daily:

Manual exports → Hours of analysis → Phone tag → Truck roll

Decisions based on incomplete data and gut feel



The ESUMS Solution Architecture

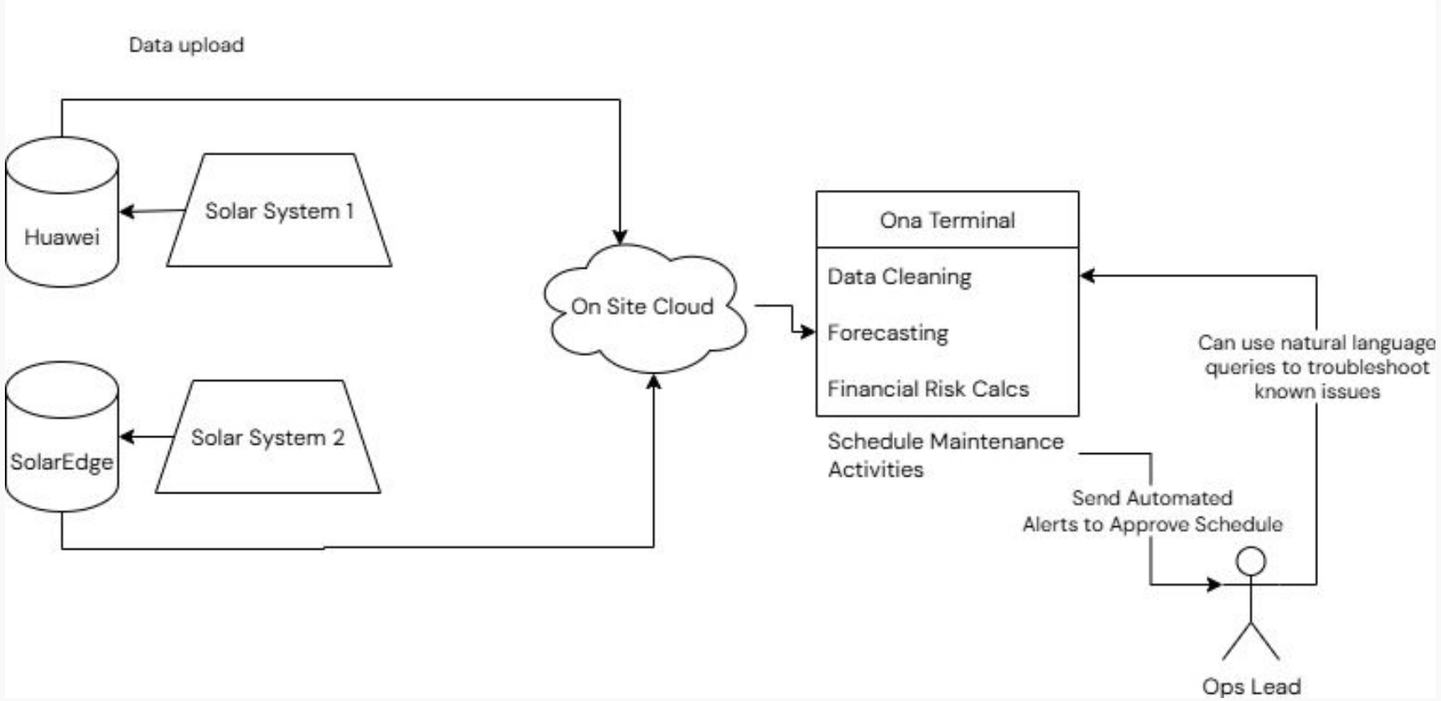
ESUMS

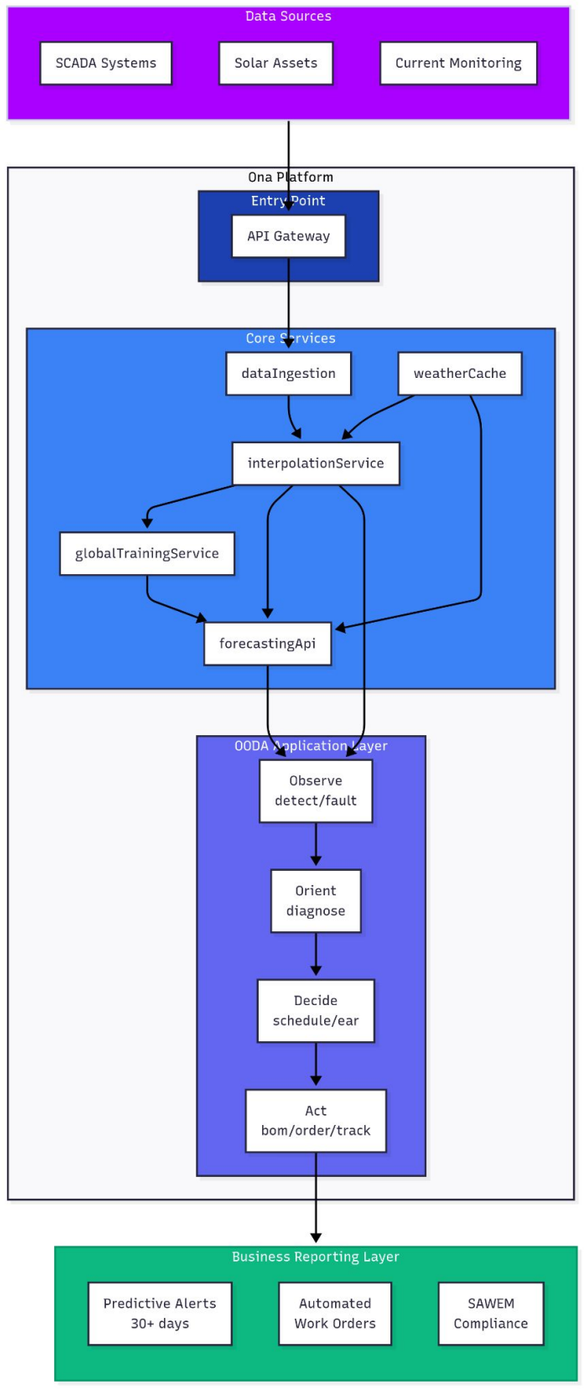
From dashboard-watching to an end-to-end O&M workflow.

An automated path from **alert → diagnosis → ticket → fix → verification**.

ESUMS replaces scattered dashboards, spreadsheets, and email loops.

Outcome: **lower MTTR, fewer repeat faults, and audit-ready traceability.**





ESUMS, Powered by Asoba's Ona Platform

Layered Architecture

Transforms raw operational data into actionable business intelligence with scalable, flexible design

API First Infrastructure

- **Real-time SCADA/inverter data ingestion & monitoring**
- **Weather data integration with ML-powered insights**
- **Global predictive analytics with 30+ day forecasting**

Extensible Platform

Additional modular services can be plugged into existing API ecosystem:

•Insurance automation, Fleet analytics, soiling calculations, Energy market integration, Electricity dispatch

OODA Loop: The O&M Layer

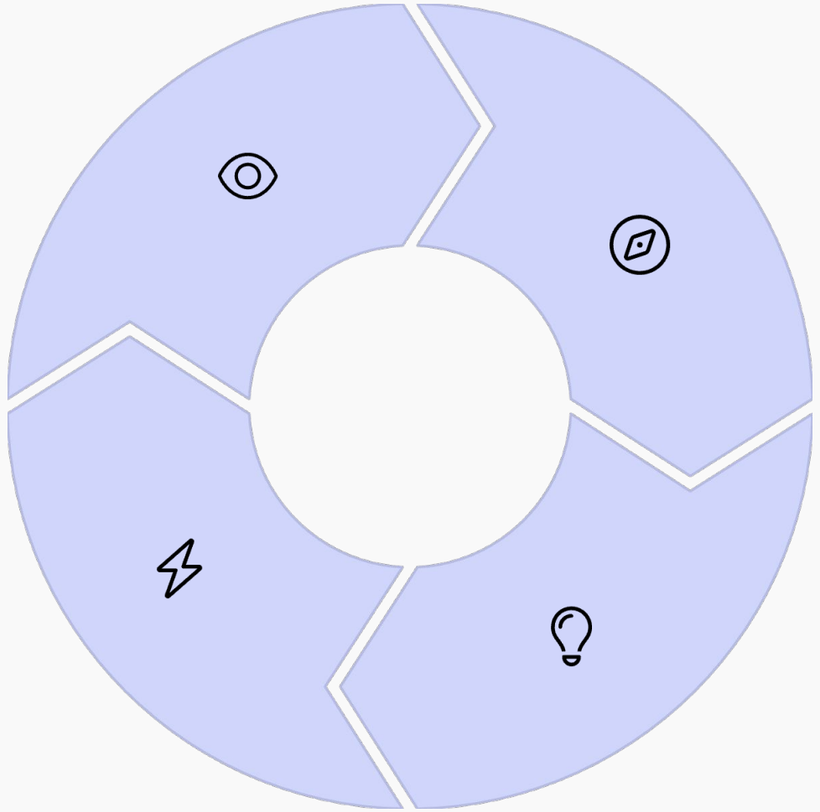
From Reactive to AI Driven in Real-Time

OBSERVE (< 5 min)

- Stream SCADA/weather data
- Detect anomalies instantly

ORIENT (< 10 min)

- AI diagnostics classify issues
- Calculate Energy-at-Risk

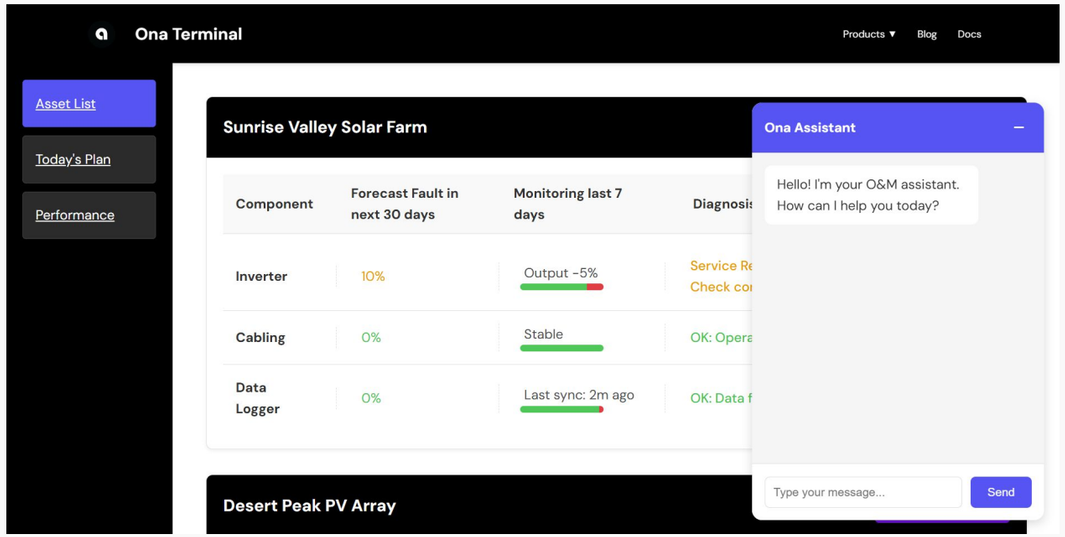


ACT (Continuous)

- Track resolution
- Update ML models

DECIDE (< 15 min)

- Optimize dispatch schedule
- Which metrics are most important?



Case Study: Sibiya Casino [data tba]

Every maintenance decision backed by AI driven economics

$$EAR = \sum(Expected - Actual) \times EnergyPrice$$

Example: String Failure

Lost: 150 kWh/day × R 1.4 = R 210/day

5-day delay = R 1 050 loss

AI Decision

Dispatch cost: R 3 500

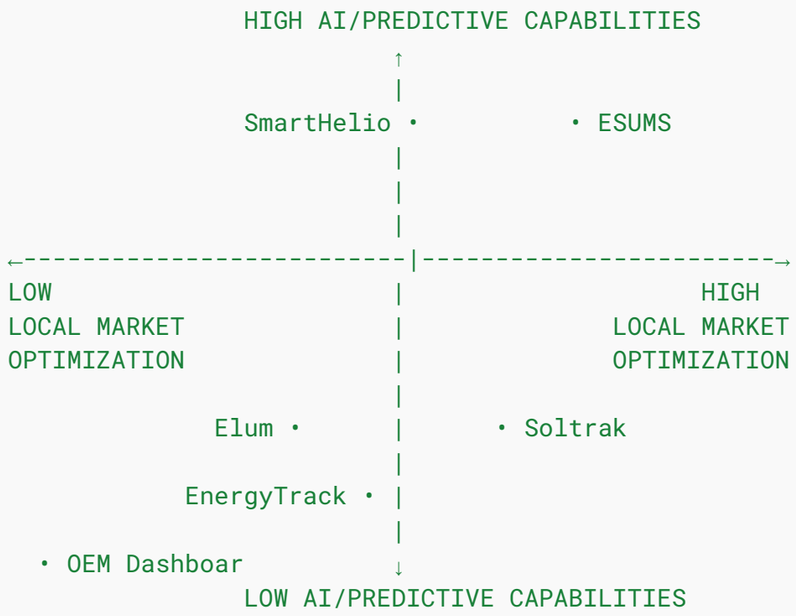
ROI: Negative – Batch with next maintenance

Case Study: Sibiya Casino

O&M Impact & Performance Metrics

Metric	Past 30 Days	Year to Date
Revenue Impact		
Additional Revenue (Performance Above Baseline)	+R12,500	+R145,000
Revenue Protected (Prevented Losses)	+R8,200	+R95,000
Cost Savings		
Avoided Downtime Costs	+R5,000	+R62,000
Predictive Maintenance Savings	+R3,200	+R38,000
Warranty Claims Recovered	+R1,500	+R18,000
Operational Metrics		
Mean Time to Repair (MTTR)	4.2 hours	3.8 hours

Competitor Analysis



Regulatory and Financial

Only platform built for South Africa's SAWEM requirements with insurance-grade reporting

AI Intelligence

30-day predictive analytics with natural language insights outpace all competitors

EPC Revenue

Seamless installation-to-O&M transition eliminates revenue gaps for EPCs

Asset Management

End-to-end automated workflows from fault prediction to work order execution

Easy Deployment

Option 1: Direct Data Feed (Most Common)

- Your inverters/SCADA systems continue sending data to your current dashboard
- We receive a copy of the same data stream via secure API or FTP
- Your team keeps using familiar tools while gaining Asoba's predictive insights

Option 2: Storage Integration

- If you store data in cloud storage (AWS S3, Azure, Google Cloud)
- We connect directly to read your historical and real-time data
- No changes to your data collection process required

Option 3: API Integration

- We pull data from your existing monitoring platform's API
- Works with SolarEdge, Huawei FusionSolar, SMA Sunny Portal, and others
- Completely non-invasive to your current operations

Implementation Timeline

Weeks 1-2: Integration

1

- SCADA/inverter connections
- Historical data ingestion
- Baseline establishment
- Custom dashboard design

Weeks 3-12: Optimization

2

- Real-time monitoring active
- Weekly performance reports
- Continuous model improvement

Week 13: Decision Point

3

- Executive ROI analysis
- Auto-conversion when metrics met
- Scale-up roadmap for portfolio