

AI Asterion | ReliCore

Predictive Maintenance & Reliability Engineering

Turning failure history into forward-looking operational intelligence — reducing unplanned downtime before it happens.



EXECUTIVE SUMMARY

ReliCore combines failure event tracking, root cause analysis, FMEA libraries, reliability modelling and predictive maintenance recommendations into one reliability engineering platform.

- 
- Every failure event is logged, categorised and turned into a structured historical record.
- 
- Guided RCA workflows convert failures into verified causal chains and corrective strategies.
- 
- MTBF and Weibull-based reliability modelling quantifies asset life and degradation.
- 
- AI-driven recommendations shift maintenance from reactive and time-based to condition-based.





WHAT RELICORE DELIVERS

- 1

Failure event tracking and structured logging
- 2

Guided root cause analysis workflows
- 3

Configurable FMEA failure mode libraries
- 4

MTBF and Weibull reliability modelling
- 5

AI-driven predictive maintenance recommendations
- 6

RCM strategy optimisation by asset criticality



TYPICAL OUTCOMES

- 

25% reduction in unplanned downtime within 12 months
- 

15–25% maintenance cost reduction through optimised scheduling
- 

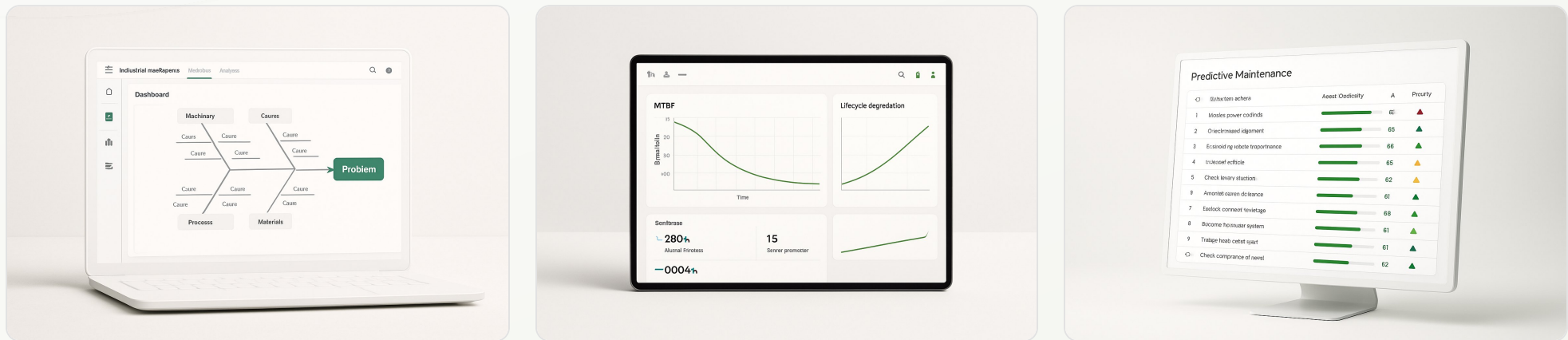
Maintenance shifted from reactive to condition-based
- 

Maintenance plans aligned to asset criticality and consequence

Six Engines.

One Predictive Intelligence Platform.

ReliCore's engines work together across the failure lifecycle — from the first logged event to a fully optimised, criticality-aligned maintenance strategy.



- 1

Root Cause Analysis
- 2

MTBF & Reliability Modelling
- 3

Predictive Maintenance

RELIABILITY ENGINE		WHAT IT ENABLES	
1	Failure Event Tracking Structured logging and categorisation of every failure event	→	Builds the historical foundation for every predictive model
2	Root Cause Analysis (RCA) Guided workflows convert failure events into verified causal chains	→	Which corrective action actually addresses the failure?
3	Failure Mode Libraries Configurable FMEA databases linked to asset types and operating context	→	What failure modes apply to this asset class?
RELIABILITY ENGINE		WHAT IT ENABLES	
4	MTBF & Reliability Modelling Statistical modelling using Weibull analysis and lifecycle degradation curves	→	How reliable is this asset, and for how long?
5	Predictive Maintenance Engine AI-driven recommendations move plans from reactive to condition-based	→	When should this asset actually be serviced?
6	RCM Strategy Optimisation Reliability-Centred Maintenance analysis aligned to criticality and consequence	→	Where should maintenance investment be prioritised?

Reliability Economics: The South African Market

South Africa's asset-intensive industries run some of the most demanding equipment fleets in the world, from platinum and coal mining to national power generation. Every percentage point of downtime carries outsized economic weight.

6.1% of South Africa's R4.6 trillion GDP generated by mining in 2024	474,736 people directly employed in South African mining (2024)	R320bn South African mining export revenue in 2024	13.25% national grid planned maintenance share reached in 2024, up from 9.94% in 2019
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WHY IT MATTERS LOCALLY



Mining and heavy industry depend on ageing, high-value fleets with little tolerance for surprise failure



National grid recovery has shown that disciplined planned maintenance directly reduces unplanned breakdowns



Contractor-heavy operations need objective, criticality-based evidence for where maintenance spend goes



Every avoided failure protects production, safety and margin in a cost-constrained sector



GLOBAL STANDARDS ALIGNMENT

1

SAE JA1011 — Evaluation Criteria for RCM Processes

2

SAE JA1012 — Guide to the RCM Standard

3

ISO 14224 — Reliability & Maintenance Data Collection

4

IEC 60300 — Dependability Management

5

API RP 580 / RP 581 — Risk-Based Inspection

One Reliability Layer Across the Asterion Suite

ReliCore does not run in isolation. Asset data, inspection findings and shutdown plans flow between modules automatically — keeping predictions grounded in real operational condition.



PLATFORM INTEGRATION



AssetVault criticality and lifecycle data feed reliability scoring and failure mode modelling



Failure predictions and maintenance priority outputs inform TurnSure shutdown scope



Inspecta inspection findings automatically update ReliCore's failure mode libraries



WHO USES RELICORE

1

Reliability Engineer — manages failure libraries and RCM outputs

2

Maintenance Planner — schedules work from predictive outputs

3

Operations Manager — monitors availability and early warnings

4

Asset Manager — tracks trends for capital investment decisions



EVERY UNPLANNED FAILURE IS A DECISION MADE TOO LATE. RELICORE MOVES THE DECISION EARLIER.



Scan to explore ReliCore online →

<https://aiasterion.com/modules/relicore.html>

