

ZAMBIA DIGITAL READINESS

12-Month Sector Roadmap

Cybersecurity, Cloud & AI Readiness



Mining & Natural Resources



Purpose Of This Roadmap



Benchmark

Locate your organisation on the
Basic → Standardized →
Rationalized → Dynamic model.



Plan

Use quarterly milestones as a
checklist, adapted to your size
and starting point.

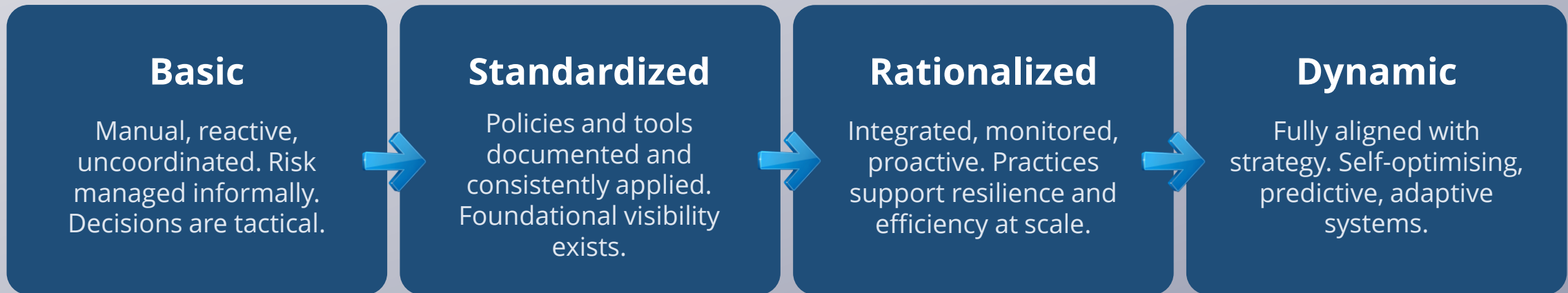


Track

Apply the KPIs as a basis for
internal targets once a baseline
is set.

Evolution Of Ransomware

A four-stage model adapted from Microsoft's Business Productivity and Core Infrastructure Optimization frameworks — applied consistently across cybersecurity, cloud, data/AI, and governance.



This roadmap is designed to move priority dimensions at least one stage forward within 12 months — not to assume a single leap to Dynamic.

Cybersecurity & Resilience

Cloud Readiness & Infrastructure

Data & AI Adoption

Governance, People & Process

Mining & Natural Resources

CURRENT MATURITY SNAPSHOT

IT systems are often Standardized, but OT and remote-site environments frequently remain Basic, with limited integration between operational technology security and enterprise IT governance.

MATURITY PATHWAY — KEY DIMENSION

Cybersecurity & Resilience (IT/OT)

Basic

OT and IT networks poorly segmented; limited visibility into industrial control systems; incident response focused on safety, not cyber events.

Standardized

IT/OT network segmentation initiated; baseline monitoring of enterprise IT; documented incident response covering both safety and cyber scenarios for key sites.

Rationalized

Mature IT/OT segmentation with monitored data flows; dedicated OT security monitoring at major sites; regular vulnerability assessment of industrial control systems and remote site connectivity.

Dynamic

Cloud-native platforms enable real-time, multi-site operational visibility; edge computing deployed at remote sites for low-latency monitoring and control; infrastructure resilience tested against site-level disruption.

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Cloud Readiness & Infrastructure

Basic

Remote sites rely on limited or unreliable connectivity; enterprise systems largely on-premise; manual data consolidation from sites to head office.

Standardized

Hybrid cloud adopted for enterprise systems (ERP, HR, finance); improved site connectivity for data transmission; documented backup and DR for head-office systems.

Rationalized

Cloud-based platforms support remote monitoring, fleet management, and production reporting; resilient connectivity architecture across major sites; automated data consolidation from site to cloud.

Dynamic

Cloud-native platforms enable real-time, multi-site operational visibility; edge computing deployed at remote sites for low-latency monitoring and control; infrastructure resilience tested against site-level disruption.

Full maturity detail across Cybersecurity, Cloud, Data & AI, and Governance is provided in the following slides.

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Data & AI Adoption



Basic



Operational data captured manually or in disconnected systems; no formal data strategy; AI use limited or absent.

Standardized



Centralised reporting for production and safety data; initial data governance for operational and safety-critical information; pilot AI use cases for predictive maintenance or safety monitoring.

Rationalized



AI-enabled predictive maintenance reduces unplanned downtime; remote monitoring of equipment and environmental conditions using sensor data; data governance covering operational, safety, and environmental data.

Dynamic

Real-time AI-driven optimisation of production, maintenance, and logistics; integrated data platform spanning OT, IT, safety, and environmental systems; continuous model monitoring tied to operational KPIs.

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Governance, People & Process

Basic

Cybersecurity and digital risk managed separately from operational/safety risk; limited cross-functional collaboration between IT and operations.

Standardized

Joint IT/operations steering on digital initiatives; baseline OT security awareness training for site engineers; documented vendor management for OT suppliers.

Rationalized

Integrated digital and operational risk governance; structured upskilling for OT security and cloud/data skills across site and head-office teams; mature change management for digital initiatives affecting operations.

Dynamic

Digital readiness embedded in enterprise and operational risk strategy; cross-site centre of excellence for digital, data, and OT security; continuous workforce development aligned to automation and AI adoption.

MINING & NATURAL RESOURCES

12-Month Quarterly Roadmap

Q1 (Months 1-3)

Assess & Stabilise

- Conduct a joint IT/OT cybersecurity and connectivity readiness assessment across head office and major sites.
- Map current network segmentation between IT and operational technology systems.
- Inventory operational, safety, and environmental data sources and identify priority use cases.
- Establish a joint IT/operations steering group for digital initiatives.

Q2 (Months 4-6)

Strengthen Foundations

- Implement or strengthen IT/OT network segmentation at the highest-risk sites.
- Migrate enterprise systems (ERP, HR, finance) to a hybrid cloud environment with documented backup and DR.
- Pilot one AI use case for predictive maintenance or remote equipment monitoring at a single site.
- Roll out baseline OT security awareness training for site engineers and operations staff.

Q3 (Months 7-9)

Scale & Integrate

- Deploy dedicated OT security monitoring at major sites with defined escalation paths to enterprise security teams.
- Extend cloud-based remote monitoring or fleet management to additional sites with resilient connectivity.
- Move the validated predictive maintenance pilot into limited production with measurable downtime tracking.
- Establish a data governance framework covering operational, safety, and environmental data.

Q4 (Months 10-12)

Optimise & Govern

- Conduct a vulnerability assessment of industrial control systems across priority sites.
- Formalise integrated digital and operational risk governance with quarterly executive reporting.
- Expand AI-enabled predictive maintenance or production optimisation across additional sites.
- Publish a 12-month digital readiness review and define year-two priorities, including edge computing and multi-site data integration.

KEY PERFORMANCE INDICATORS

Indicative 12-month targets. Establish baselines during Q1 assessment activities.

KPI / METRIC

12 MONTH TARGET

- | | |
|---|---|
| 01 Unplanned equipment downtime (priority sites) | Reduce by 20% from baseline by Month 12 |
| 02 % of major sites with IT/OT network segmentation | From baseline to 80% by Month 12 |
| 03 Mean time to detect an OT security anomaly | Reduce by 40% from baseline by Month 12 |
| 04 % of operational/safety data under governance framework | 100% of priority data by Month 9 |
| 05 Number of sites with cloud-based remote monitoring | At least double baseline by Month 12 |
| 06 Number of AI predictive maintenance use cases in production | At least 1 by Month 9, 2+ by Month 12 |
| 07 Mean time to detect an OT security anomaly | 85% of in-scope staff by Month 6 |

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Next Steps

Digital readiness is not a one-time project but an ongoing discipline. For Mining & Natural Resources, the priority is to move further along in governance, data, and AI oversight to match the pace of technology adoption.

The path forward follows the same pattern:

1.

Assess
honestly

2.

Stabilise the
foundations

3.

Scale
deliberately

4.

Govern
continuously

This roadmap is offered as a starting point for that conversation — within your organisation, across industry peers, and as part of the dialogue the Zambia Market Entry Webinar aims to convene.