

Formula 1

Content placeholder

Formula 2

Content placeholder

Related Content

Title	Type	Slug
Digital Muckpile Analysis Using Drone Photogrammetry	lesson	digital-muckpile-analysis-drone-photogrammetry
Blast Design Excel Template v4.2	resource	blast-design-excel-template
Drill Rig Maintenance Inspection Checklist	resource	drill-rig-maintenance-checklist
Rock Mass Rating (RMR) Field Survey Sheet	resource	rmr-field-survey-sheet
Drilling Energy Benchmarking Dashboard (Power BI)	resource	drilling-energy-dashboard

Detailed Explanation

ISO 23247-2:2022 establishes a systematic, traceable, and auditable validation framework for digital twins, distinguishing validation (‘Are we building the right twin?’) from verification (‘Are we building the twin right?’). It mandates evidence-based assessment across multiple dimensions: conceptual fidelity (alignment with stakeholder requirements and operational intent), behavioral fidelity (accuracy of simulation, response, and prediction under defined conditions), data integrity (provenance, timeliness, quality, and synchronization with physical assets), and contextual fidelity (representation of environmental, temporal, and organizational constraints). The standard prescribes a staged validation

process—encompassing planning, specification of validation objectives and success criteria, execution of tests/scenarios, evidence collection, and formal sign-off—and emphasizes iterative validation throughout the digital twin’s lifecycle, not just at deployment. For mining applications, this includes validating twin capabilities for real-time equipment monitoring, predictive maintenance, safety scenario simulation, and production optimization against actual mine site KPIs, sensor networks, and geological models. Crucially, ISO 23247-2 requires documented traceability between validation artifacts (e.g., test cases, logs, metrics) and the original system requirements, enabling regulatory compliance, certification readiness, and continuous improvement.

Key Components

#	Component
1	Validation Objectives and Success Criteria
2	Traceable Evidence Matrix
3	Behavioral and Data Fidelity Assessment Protocol

Applications

#	Application
1	Validating mine equipment digital twins for predictive maintenance accuracy
2	Certifying digital twin-based safety training simulators in underground mining operations
3	Auditing digital twin compliance for ISO 55001-aligned asset management systems

Related Concepts

#	Concept
1	Digital Twin Lifecycle Management
2	Model-Based Systems Engineering (MBSE)

#	Concept
3	Industrial Internet of Things (IIoT) Interoperability

Tags

digital twin, ISO standard, mining technology, validation framework, industrial automation

ISO 23247-2:2022 Digital Twin Validation Checklist

ToolFusion Engineering