Lunar Research Initiative (LRI)

Applied Quality, Risk, and Manufacturing Readiness Research for Lunar Systems

Mission

The Lunar Research Initiative is an independent scientific and educational initiative focused on advancing quality engineering, risk governance, and manufacturing readiness for lunar and autonomous systems. LRI develops applied research, analytical frameworks, and standards-aligned guidance to support safe, reliable, and mission-ready operations in extreme and communication-delayed environments.

Research Scope

• Quality system architecture for autonomous and distributed operations
• Risk governance under communication delay and evidence degradation
• Manufacturing readiness and verification for lunar and extreme environments
• Data integrity, decision fidelity, and hazard drift in time-shifted systems

Publications and Outputs

LRI publishes open-access technical papers intended for practitioners, researchers, and policy planners working in high-reliability systems. Current publications include:

• A Risk-Based Quality Architecture for Lunar Production Systems (engrXiv, 2025)
• Predictive Quality for Autonomous Lunar Manufacturing (Zenodo, 2025)
• Data Integrity as Mission Assurance (Zenodo, 2025)
• Temporal Risk Signatures: Hazard Drift and Decision Fidelity (Zenodo, 2025)

Positioning

LRI operates independently of commercial interests. Its outputs are designed to complement formal certification, regulatory review, and mission authority decision-making, not to replace them.

Contact

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