BLOCK VECTOR TECHNOLOGIES, LLC
WHERE PRACTICAL ENGINEERING MEETS
HANDS-ON INNOVATION.

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Company Overview

Purpose and Mission

BLOCK VECTOR Technologies, LLC is a research-driven engineering organization focused on the design, evaluation, and documentation of **resilient, autonomous computing and communications systems** for environments where conventional infrastructure cannot be assumed.

The company's work emphasizes **deterministic behavior under failure**, system observability, and recovery without reliance on external connectivity or continuous human oversight. These principles are foundational to applications in space exploration, remote field operations, disaster response, and other austere or infrastructure-limited environments.

BLOCK VECTOR's mission is to **advance practical engineering methods** that prioritize reliability, traceability, and teachable system behavior over novelty or complexity.

Research Focus Areas

BLOCK VECTOR conducts applied research and system validation in the following areas:

- Autonomous recovery and self-healing system behavior
- Infrastructure-independent networking and local communications
- Power-aware, low-power system operation
- Deterministic boot, configuration, and restoration pathways
- Instrumented testbeds for failure analysis and evidence capture
- Documentation-first engineering practices

Specific system architectures and reference designs are developed and evaluated internally and disclosed selectively through research collaborations and grant-funded work.

Engineering Philosophy

BLOCK VECTOR is guided by several core principles:

- **Failure is expected.** Systems are designed with the assumption that components will fail, power will be interrupted, and connectivity will be lost.
- **Observability enables survival.** Systems must provide sufficient telemetry and logging to explain what occurred, when it occurred, and why.

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- **Recovery must be deterministic.** Restoration paths should be scripted, testable, and repeatable rather than ad hoc.
- **Documentation matters.** If system behavior cannot be explained or reproduced, it is not considered valid.
- **Teachability is a design constraint.** Systems should be understandable and analyzable by others without exposing sensitive or secure implementation details.

These principles inform both internal development and external research activities.

Experimental and Validation Approach

BLOCK VECTOR employs **modular, instrumented testbeds** built from commercially available components to validate system behavior under controlled conditions. These testbeds are used to:

- induce specific failure modes
- observe system response and degradation boundaries
- validate recovery logic without human intervention
- capture timestamped evidence suitable for analysis and review

Experimental platforms are designed to be **reproducible and auditable**, enabling collaboration, education, and future academic engagement without disclosing protected architectures.

Leadership

David Forbes
Founder & Principal Systems Architect

David Forbes is a senior systems architect with over four decades of experience in the design, operation, and recovery of complex computing systems. His work spans enterprise infrastructure, distributed systems, and reliability-focused engineering, with a consistent emphasis on observability, fault tolerance, and disciplined documentation.

David leads BLOCK VECTOR's technical direction, system architecture, and experimental design, ensuring that all research activities are grounded in practical, testable engineering principles.

Victoria Forbes
Executive Director, Founding Executive

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Victoria Forbes oversees organizational development, editorial integrity, and research communication at BLOCK VECTOR Technologies. She brings extensive experience in authorship, editing, and instructional content creation, including the publication of more than 150 educational books.

Victoria is responsible for ensuring that technical material is accurately conveyed, internally consistent, and suitable for review by academic, governmental, and educational audiences. She maintains full human authorship and editorial control over all published material, using AI tools strictly as productivity and visualization aids to enhance clarity and efficiency.

Collaboration and Future Pathways

BLOCK VECTOR anticipates future collaboration with academic, research, and space-aligned programs to expand educational engagement and research scope. Such collaborations are expected to build upon **documented feasibility**, validated testbeds, and shared interest in resilient system behavior. Any future academic or educational engagement would occur under appropriate institutional supervision and applicable agreements."

No intellectual property is assigned or transferred through public materials. Specific system designs are disclosed only within appropriate research or contractual contexts. Some material may be protected by patent.

Closing Statement

BLOCK VECTOR Technologies is committed to advancing engineering practices that favor **clarity over complexity**, **evidence over assumption**, and **resilience over convenience**. The company's work is guided by the belief that robust systems are built not by avoiding failure, but by understanding it thoroughly.