

BC Automation

Quantum IO™ & QGRA™ – Observer-State Edge Communication

Tech Primer - 07/09/25



Control without comms. Synchronization without signals.

Quantum IO™ is BC Automation's symbolic edge architecture — a data model where two systems remain in sync without physical transmission. No fiber. No radio. No latency. Just deterministic symmetry, rooted in quantum observer-state logic. QGRA™ (Quantum Gate Relay Aggregation) is the entanglement framework behind that logic: a symbolic coordination fabric that synchronizes state across disconnected zones. Together, they define the far edge of the stack — built for black zones, spaceflight, and compartmentalized operations where signals aren't allowed or possible.

PROBLEM: Some systems must coordinate without communication.

- RF and wired signals are blocked or prohibited
- Traditional telemetry introduces latency, traceability, and risk
- Physical separation (spaceflight, defense, sacred zones) breaks typical control models
- Air gaps create decision lag and autonomy gaps

SOLUTION: Synchronize through symbolic logic.

- Quantum IO™ uses mirrored state collapse to maintain deterministic agreement
- QGRA™ routes symbolic transitions across entangled edge environments
- MetaLoop-compatible: trains loops via symbolic convergence, not data polling
- SPA™-aware: supports symbolic tags for non-transport events
- An active extension of existing architecture; roadmap includes MOT-based symbolic execution for full non-transport alignment

OUR IMPACT: Determinism, without the data trail.

Quantum IO™ enables:

- Signal-free coordination in ethics-sensitive or infrastructure-denied zones
- Air-gapped autonomy with zero emissions
- TrustLabel™-compatible anchoring for mirrored state proof
- Foundations for SDA in disconnected or post-network environments
- Quantum IO™ is not a replacement for networks — it's a non-network built from symmetry itself.

95+

clients served

625+

unique processes automated

\$3.8B+

client dollars saved

"A huge asset to any company looking to improve their cost and reliability."

Chris Whitehair
SVP Global Operations at SunOpta

"[BC Automation's] solutions are most thorough and comprehensive."

Ned Mitenius
Founder & Sr Consultant at Periscope Consulting

Let's Transform Your Manufacturing Together.



✉ Admin@bcautomation.io

📍 Tucson, AZ operations
Florida headquarters