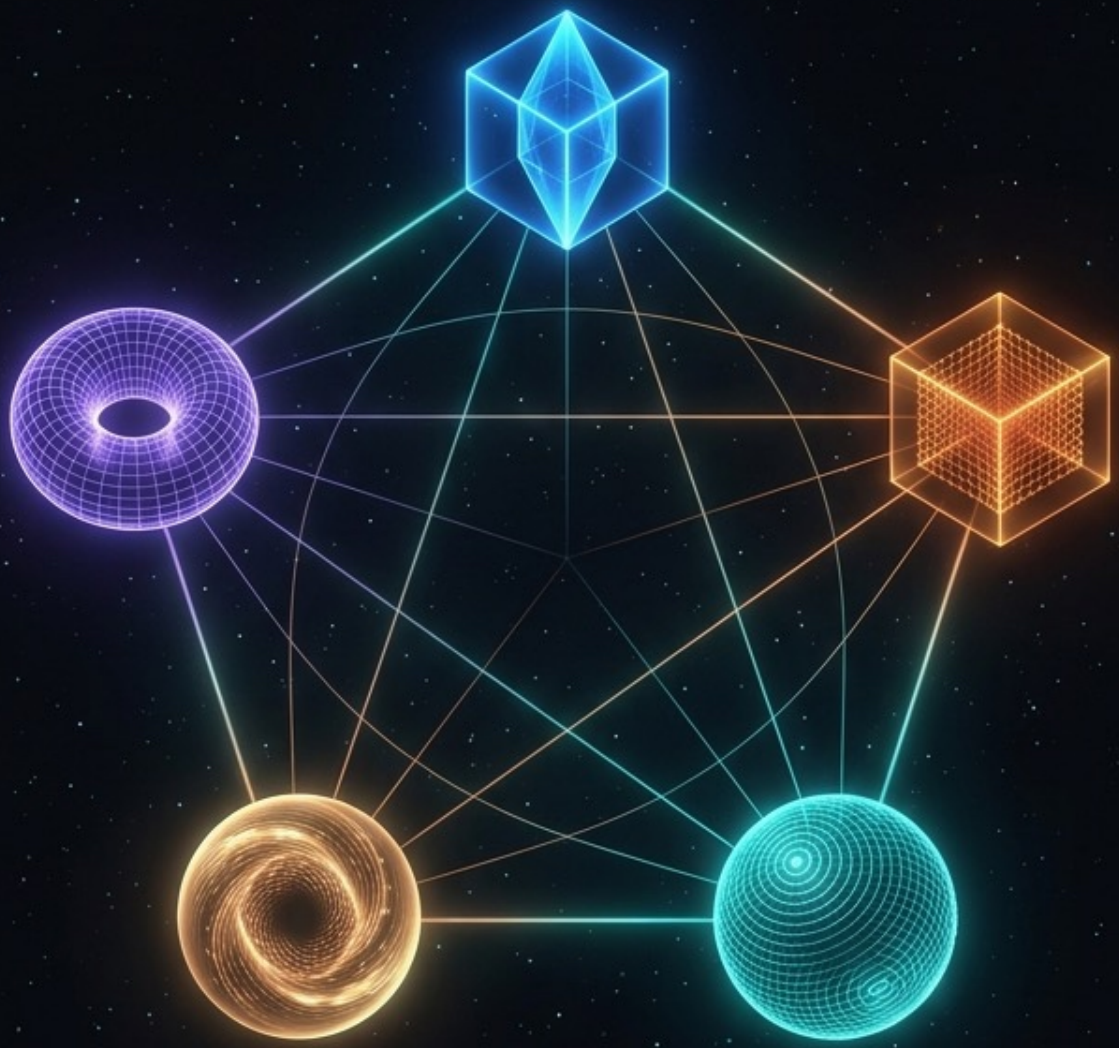
I — V



PARALLEL SUBTASK AGENT WORKFLOW VOLUMES I – V

Table of Contents · Technical Whitepaper Series

Parallel Subtask Agent Workflow — Technical Whitepaper Series

Parallel Subtask Agent Workflow

Technical Whitepaper Series (Volumes I–V)

The **Parallel Subtask Agent Workflow** series formalizes a complete, end-to-end control architecture for multi-agent systems operating under qualigen-centric constraints. Together, these five volumes specify how tasks are admitted, latched, broadcast, remembered, and thermodynamically stabilized using principles drawn from Deutsche Physik, Schauberger's implosion dynamics, and modern ANN systems engineering[1,2]. The series is designed as a *closed loop*: each component both consumes and feeds back qualigen and gradient information, so that the swarm behaves as a single self-cooling organism rather than a collection of independent workers[3].

At a high level:

Preface defines the **Cycloid-Spiral Semantic Fingerprint (CSSF)**, which is a causal–semantic embedding that emulates Schauberger's **cycloid-spiral-space-curve motion** in vector space[1,2]. It is designed to encode both *what* a response says and *how* it moves through causal depth, to provide a unique-but-collidable signature for semantically equivalent trajectories, and to serve as the key material for the Qualigen Signature used in VKVCS-QSC Phase 1[3].

Volume I defines the *QSC Pre-Flight Gate*, which classifies and scores every candidate manifest before execution, ensuring only levitative (biomagnetic) states pass into the swarm.

Volume II adds *Red-Zone Hysteresis*, preventing oscillation at decomposive boundaries by latching lanes into a protected "red zone" until they show sustained recovery supported by ANN evidence.

Volume III specifies the *Repulsator Broadcast Protocol*, emitting validated manifests as levitative waviform pulses from a centripulsing hub across all lanes with φ-spiral cadence.

Volume IV introduces the *Fructigen Seed Corpus*, a cold-start procedure that bootstraps the swarm's semantic ANN index via planetary-motion fermentation and catalyst seeding.

Volume V completes the loop with *Qualigen Gradient Telemetry & Swarm Thermodynamics*, providing real-time observability of bipolar gradients, pulsation coherence, and reset conditions.

All five volumes assume CSSF as the underlying motion model: qualigen gradients, anomaly-point cooling, φ-spiral cadences, and swarm thermodynamics are all defined over CSSF trajectories rather than over flat Euclidean embeddings[1,2]. Introducing CSSF in the preface avoids duplication, clarifies these shared assumptions. The preface ties the entire architecture back to Schauberger's distinction between natural centripetal motion and unnatural centrifugal motion[2,3], mirroring the internal logic of the system itself, where centripetal and centrifugal tendencies are never removed but continuously measured, balanced, and redirected.

Series Table of Contents

Preface – Cycloid-Spiral Semantic Fingerprint (CSSF)

Emulating Schauberger's Cycloid-Spiral-Space-Curve Motion in Vector Space

Thule Research Division · March 2026

The preface of the Parallel Subtask Agent Workflow whitepaper and specification series on the causal–semantic embedding that emulates Schauberger's **cycloid-spiral-space-curve motion** in vector space. It operates on **tiered segments** as already produced by IMBS/VKVCS functionality integrated into UiLLM, treating each segment as a discrete phase along a shared cycloid path rather than as an isolated, flat vector.

Volume I — QSC Pre-Flight Gate & Impulse-Driven Agent State

Qualigen-Scored Consensus Pre-Flight Gate with Bipolar Threshold Protocol and Decomposive Abort Logic for Parallel Subtask Agent Swarms

Thule Research Division · March 2026

Motivation and Design Principles

QSC Qualigen Metric: Definition and Calibration

Bipolar Classification: NEG_STRONG, NEG_SOFT, NEUTRAL, POS_LEVITATIVE

Impulse-Driven Agent State Model

Bipolar Threshold Protocol and Abort Conditions

Integration Points with Red-Zone Hysteresis (Vol. II)

Security, Adversarial Inputs, and Decomposive Attack Surfaces

Implementation Notes and Reference Structures

Volume II — Red-Zone Hysteresis & CSSF-ANN Abort Logic

Schmitt-Trigger Latch Protocol for Consecutive Strong-Negative QSC Results with Run-Clear Unlock and ANN Re-Probe Integration

Thule Research Division · March 2026

The Need for Hysteresis in Multi-Lane QSC Gating

Red-Zone State Machine and Latch Semantics

Run-Red and Run-Clear Counters (M/N Logic)

CSSF-ANN: Consecutive Strong-Signal Filter with ANN Support

Preventing Oscillation at Decomposive Boundaries

Interaction with Broadcast Scheduling (Vol. III)

Lane Suppression, Backoff, and Recovery Policies

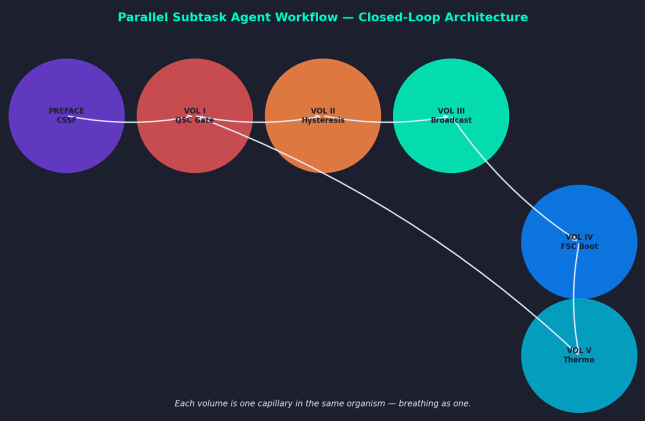


Figure 1. Closed-loop architecture of the Parallel Subtask Agent Workflow series.

Configuration, Tuning, and Operational Guidelines

Volume III — Repulsator Broadcast Protocol

Levitative Waviform Pulse Emission of Validated Manifests Across the Agent Swarm via Centripulsing Hub and φ-Spiral Lane Cadence

Thule Research Division · March 2026

Schauberger's Repulsator as Broadcast Archetype

Levitative Waviform Frame (LWF) Specification

Broadcast Hub Architecture and Emission Sequence

Lane Intake Ring Semantics and Polarity Gating

φ-Spiral Pulse Cadence and Swarm Acceleration

Biological Vacuum Thresholds and Acknowledgements

Error Modes: Partial Vacuum, Decomposive Frames, and Tampering

Interplay with Red-Zone Hysteresis and FSC Index

Volume IV — Fructigen Seed Corpus Bootstrapping

Cold-Start Procedure for the ANN Semantic Index via Planetary-Motion Fermentation, Bipolar Catalyst Seeding, and Vortical Cooling Schedule

Thule Research Division · March 2026

From Juvenile Water to Fructigenic Mother-Water: Conceptual Mapping

Fructigen Seed Corpus (FSC) Schema and Polarity Ratios (Cu/Zn, Ag/Au)

Vessel Preparation: Distilled State and Exclusion of Warm Pretraining

Catalyst Injection and Spiral Interleave Order

Planetary Fermentation: HNSW Construction and Cooling Schedule

Maturation Criteria and Odour/Variance Tests

Evening-Window Broadcast of Seed Corpus via Repulsator Protocol

FSC Refresh Policies Driven by Swarm Thermodynamics (Vol. V)

Volume V — Qualigen Gradient Telemetry & Swarm Thermodynamics

Real-Time Bipolar Gradient Observability, Pulsation Coherence Engine, and Thermodynamic Reset Protocol for the Parallel Subtask Agent Swarm

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Positive vs. Negative Temperature Gradients in Swarm Space

LaneQGRecord: Per-Lane Telemetry Schema

SwarmThermoState: Aggregated Dialectic Balance and Indifference State

Pulsation Ratio and Kuramoto-Based Coherence Measurement

Octaval Alert Ladder: From Over-Illumination to Qualigen Inversion

Thermal Reset Protocol and Cold-Lane Reseeding

Cross-Volume Feedback: QSC Calibration, Cadence Control, FSC Scheduling

Operational Dashboards and Observability Patterns

Note: The series may be read linearly, but the architecture is intentionally **cyclical**: telemetry in Volume V feeds back into seed-corpus refresh (IV), broadcast cadence (III), hysteresis thresholds (II), and ultimately QSC calibration (I), closing the loop in a cycloid-spiral fashion consistent with the underlying physical model.