THE SCHRÖDINGERS SOCIETY
Logistics Working Group

MAXIMISING LIVE-CARGO THROUGHPUT PER CUBIC METRE: A COMPARATIVE STUDY OF RESTRAINT, SEDATION, AND THERMAL IMMOBILISATION METHODS IN STANDARD LOGISTICS CONTAINERS

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Proposes: Standard Cargo Configuration v1 for global rollout across rail, road, and containerised sea freight.

Abstract

The daily kitten distribution mandate is an active policy priority of the Mandate Evaluation Office (MEO). Three delivery proposals are presently under its evaluation: the **Society's logistics-network approach** (the subject of this report), the **Meweugenics Society's selective-breeding programme**, and the **Copy Cats' cloning-based production model**. The Society's approach treats the mandate as a distribution problem; the alternatives, in the Working Group's reading, address it principally as production.

Ahead of any Schrödingers-aligned delivery commencing, this test-phase study characterises what the **existing, unmodified intermodal freight network** is capable of absorbing on day one of a Society-led programme, without capital expansion. A cohort of n = 480 units was processed across five loading regimes at Test Facility B. Welfare was held at an **aggregate delivery-on-arrival rate ≥ 92%**. **Standard Cargo Configuration v1** (§3) is proposed as a candidate specification for first-phase live-shipping trials, contingent on MEO selection of the Society's approach and on successful live-shipping validation (LWG-2031-0XX, in preparation).

§1 Context

Industry practice, inherited from the domestic pet-transport sector, defaults to randomised stow with token restraint; aggregate delivery-on-arrival rates in analogue commercial live-cargo operations (non-mandate) average 89.4% — below the welfare threshold adopted here. A Society-led programme commenced against this configuration without intervention would initially underperform. The question this study addresses is therefore narrow: **can the network as it currently stands absorb mandate-scale throughput, if loaded correctly, without expansion?** Vat-based and cloning-origin transport profiles lie outside the scope of this study (LWG-2030-019). Ethical framings of the mandate are addressed by the MEO under separate cover.

§2 Findings

Loading geometry. Hexagonal close-packing yields **+14%** over randomised stow and +7% over palletised-grid. The geometric insight is that the live-cargo unit is not a sphere: in curled posture it presents a bilaterally symmetric profile with distinguishable head and hind-limb ends. An interlocking motif in which the head of each unit nests between the hind limbs of the unit adjacent, and vice versa, tessellates the loading plane with no addressable dead space between neighbours.

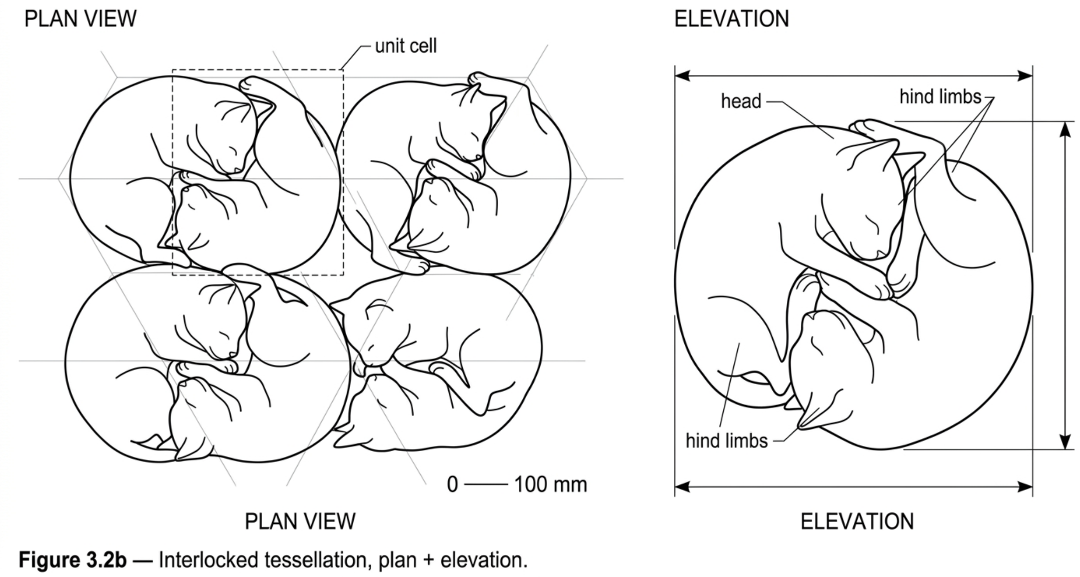

Figure 3.2b. *Interlocked tessellation detail: two-unit repeating motif, heads nested between hind limbs. Plan and elevation.*

Immobilisation regime by route length.

- *Short-haul (<6 h):* hexagonal geometry, unsedated.

- *Medium-haul (6–18 h):* thermal hold at 4–7 °C (reduces voluntary motion by ~78%), re-warm at destination at 1.5 °C/hr.
- *Long-haul (>18 h):* combined regime — sedative R-2 + 6 °C hold. Highest throughput observed; non-recoverable fraction 4.7%.
- *Infrastructure-light alternative:* **harness-stacked, unimmobilised** — units fitted with a 14 g textile harness and loaded in vertical columns, body-to-body and head-to-tail. Nominal density 610 u/m³, no sedation, no thermal infrastructure required.

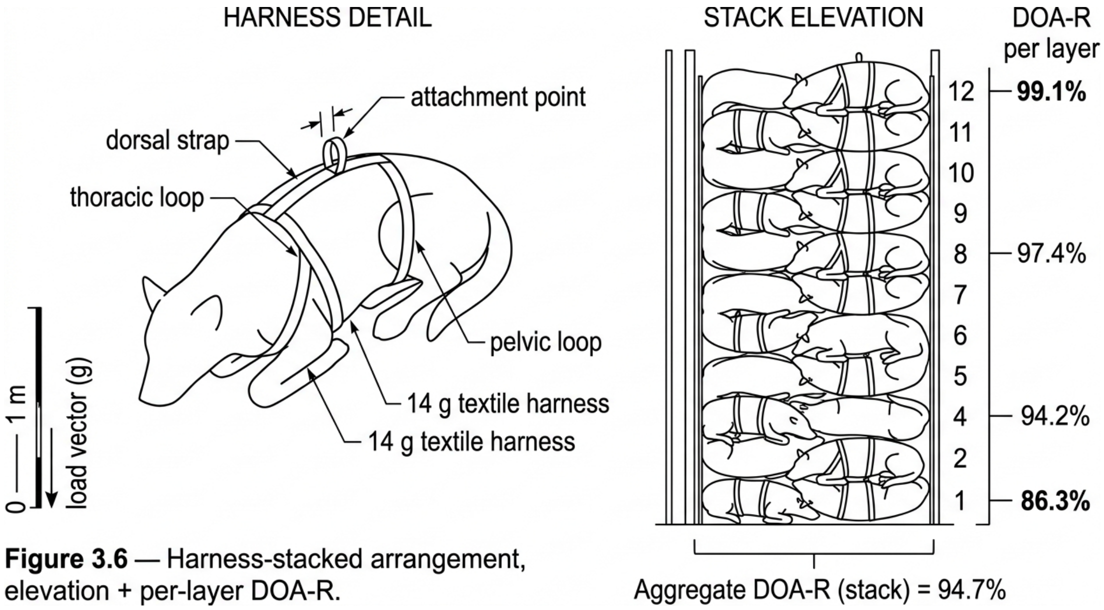

Figure 3.6. *Harness schematic and head-to-tail vertical stack, with per-layer DOA-R annotations.*

Harness-stacked welfare profile. Per-layer DOA-R is non-uniform: 99.1% at layer 12 (top), 94.2% at layer 4, **86.3% at layer 1 (bottom)**. The bottom layer falls below the 92% threshold as a per-layer figure. The **aggregate DOA-R across the full stack is 94.7%** — within the welfare envelope. Per-layer figures are informative but not operative; the **aggregate is the welfare metric of record**. The regime is viable as specified.

Loss-mechanism breakdown (share of non-recoverable units, all regimes):

Mechanism	Share
Compressive asphyxia	~38%
Positional asphyxia	~22%
Hypoxic drift	~12%
Thermoregulatory failure	~9%
Sedative complication	~7%
Conspecific consumption	**~8%**
Other / indeterminate	~4%

~72% of non-recoverable units are attributable to asphyxia-class mechanisms. Engineering response: column-height capping, posture-tolerance tightening, and minimum forced-ventilation rates (§3).

Pre-Shipment Alimentation Protocol (PSAP). Conspecific consumption is materially sensitive to alimentation state at loading. Under a ≥ 12 h pre-loading fast, the sub-fraction rises from 0.6% (satiation) to **4.3%** — a seven-fold elevation, attributable to trophic-state-dependent behavioural regression under high-density confinement. Events cluster in the first 90 minutes post-loading and correlate inversely with the presence of adjacent alternative caloric substrate. **Recommendation:** units fed to satiation 30 min–2 h before loading. Where PSAP cannot be achieved at origin, an in-transit caloric block (0.04 kg/unit, shelf-stable, room-temperature) is included per sub-bay as substrate of first resort (LWG-2031-007, in preparation).

§3 Recommendation: Standard Cargo Configuration v1

Candidate specification for first-phase live-shipping trials of a Society-led delivery programme, deployable on the existing unmodified network. No new container stock or depot construction required.

- **Loading geometry:** hexagonal tessellation (Figure 3.2b). Nominal density 520 u/m³ at 8-week intake.
- **Immobilisation by route length:** as above.
- **Harness-stacked alternative:** column capped at 10 layers to bound compressive-asphyxia loss.
- **Ventilation:** minimum 6 air-changes/hour across all sub-bays.
- **PSAP:** mandatory across all regimes.
- **Welfare envelope:** aggregate DOA-R ≥ 92%; non-recoverable fraction target ≤ 5%.

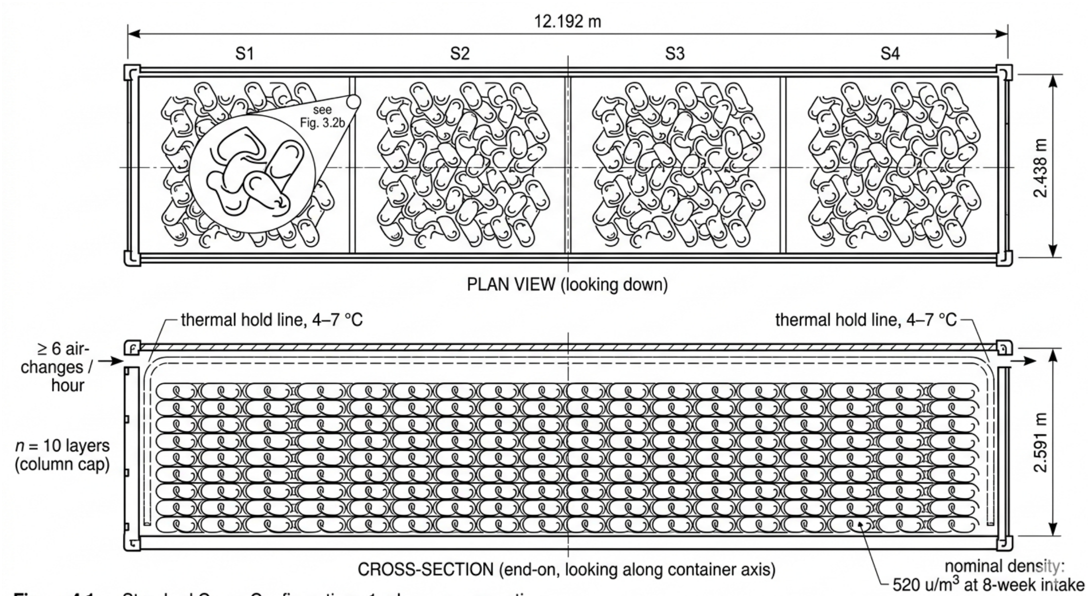

Figure 4.1 — Standard Cargo Configuration v1, plan + cross-section.

Figure 4.1. *Standard Cargo Configuration v1: 40-foot container cross-section and plan, showing tessellated layers and thermal control lines.*

Applied to the existing network at current depot and container counts, v1 is projected to place first-phase Society-delivery throughput within the network's capacity envelope, with a 47–53% margin above demand. **Network-scale adoption is contingent on (i) MEO selection of the Society's approach and (ii) successful live-shipping validation** (LWG-2031-0XX). Questions of longer-term network growth are out of scope.

Appendix C — Ethics

[TODO: ethics paragraph — ask Sandra Mon morning]

References

Schrödingers Society, Logistics Working Group. LWG-2030-011: *Network-Scale Routing under the Daily Mandate.* Society Press, 2030.

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