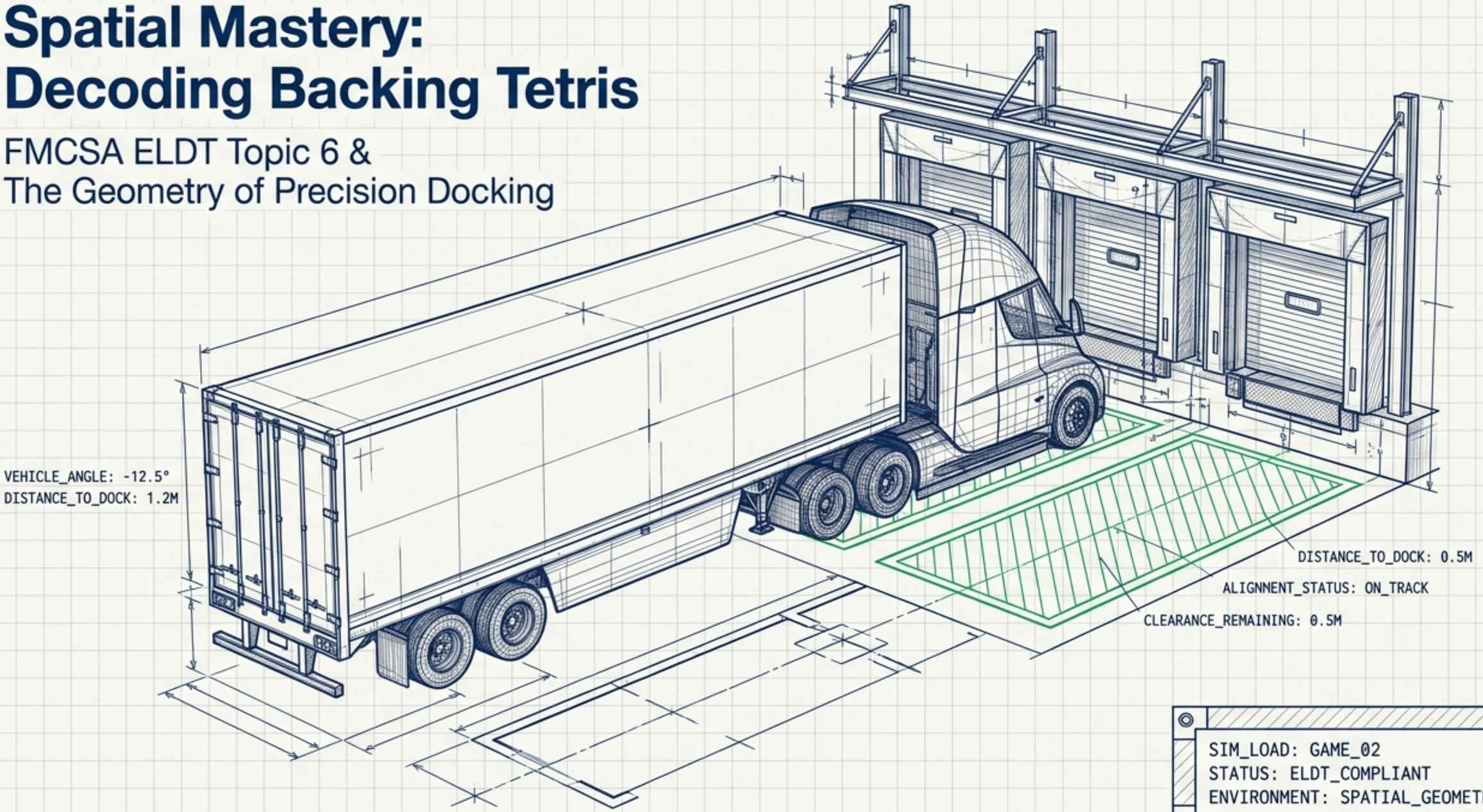
Spatial Mastery: Decoding Backing Tetris

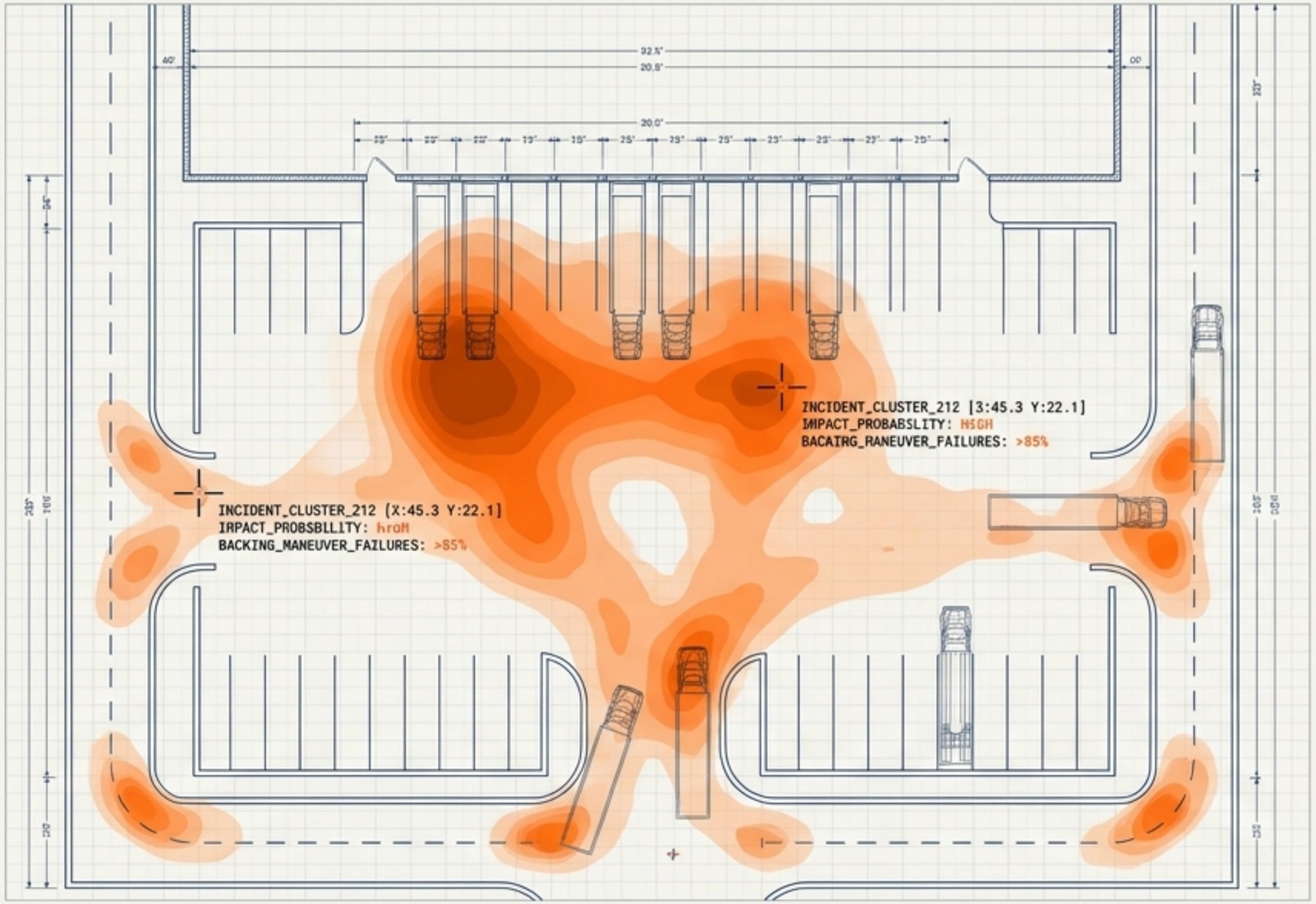
FMCSA ELDT Topic 6 & The Geometry of Precision Docking



SIM_LOAD: GAME_02
STATUS: ELDT_COMPLIANT
ENVIRONMENT: SPATIAL_GEOMETRY_V1

Gemini Notebook

THE CDL FILTER AND THE COST OF BLIND GEOMETRY



THE PHYSICS DEFICIT

The human brain is not naturally wired to calculate delayed, opposing pivot trajectories in reverse.

THE FINANCIAL BLEED

Low-speed yard accidents drive disproportionate insurance overhead and equipment downtime.

THE TRADITIONAL BOTTLENECK

In-cab yard training is limited by physical space, fuel burn, and high stress, yielding only 2-3 repetitions per hour.

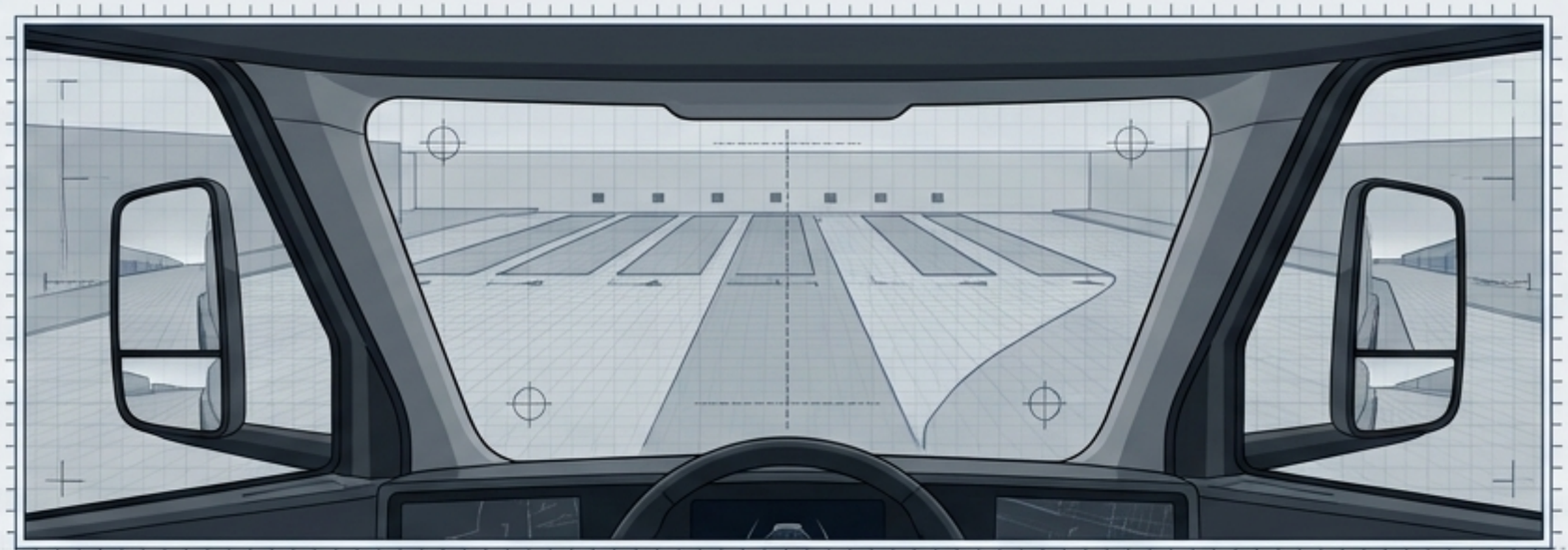
Gemini Notebook

HIGH-FREQUENCY REPETITION VIA PURPOSE-BUILT SIMULATION

MODULE_01:
90-Degree Alley Dock

MODULE_02:
Offset Backing

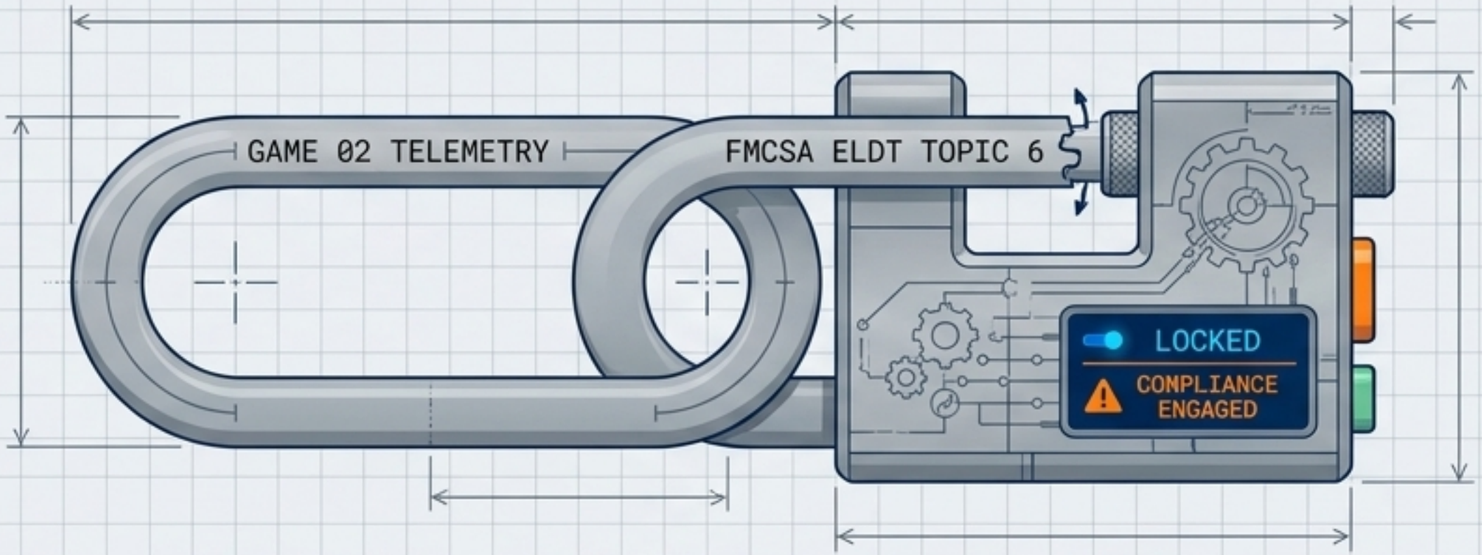
MODULE_03:
Parallel Parking



The simulator environment enforces high-frequency repetition, allowing students to map spatial boundaries and internalize physics objectively before ever sitting in a physical cab.

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THE FEDERAL ANCHOR: ELDT COMPLIANCE LOCK-IN



FEDERAL REQUIREMENT

49 CFR Part 380, Subpart F, F, App A, Topic 6: Basic Operation – Backing and Docking.

SIMULATED DELIVERY

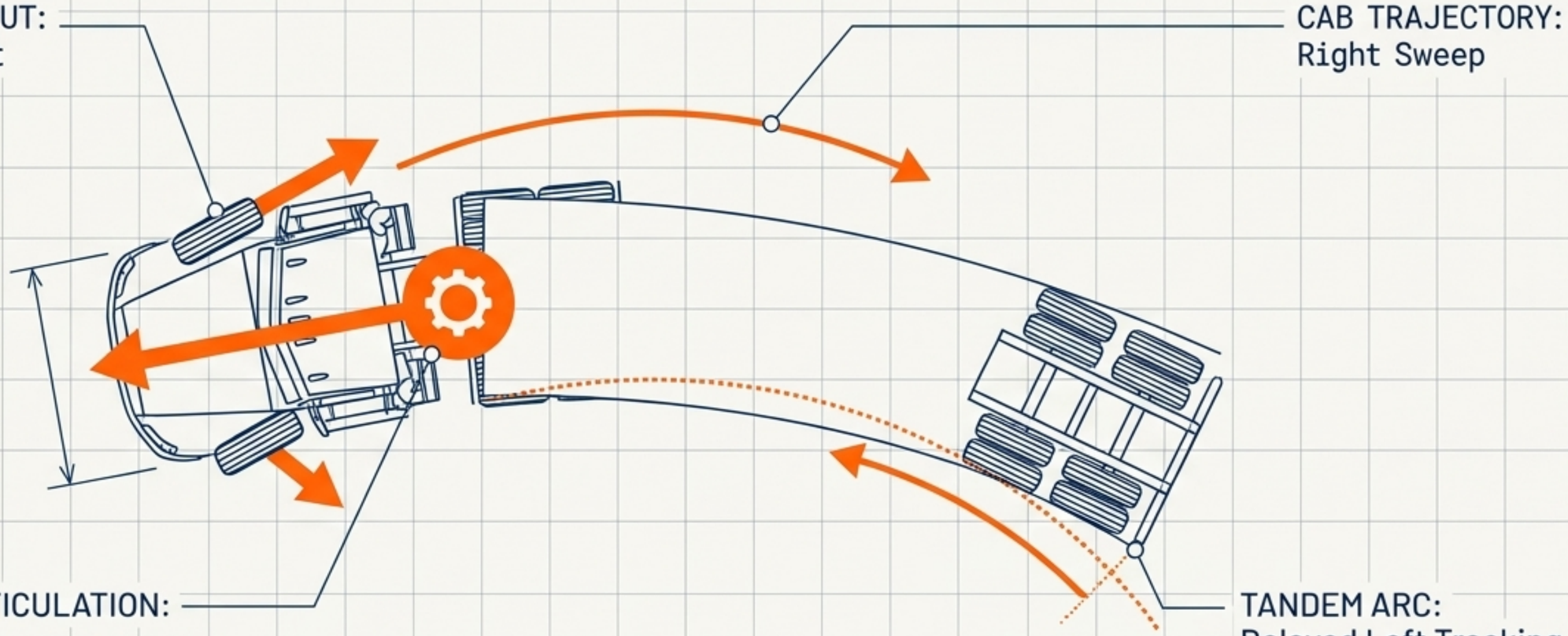
Permissible supplemental theory delivery validating comprehension of backing geometry prior to the physical range.

THE STANDARD

Federal law requires an 80% passing threshold for theory comprehension. Game 02 Game 02 strictly enforces this benchmark through verifiable, logged assessment data.

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DECODING TRAILER PIVOT GEOMETRY



The simulator renders these invisible mathematical arcs visible, accelerating spatial comprehension prior to physical execution.

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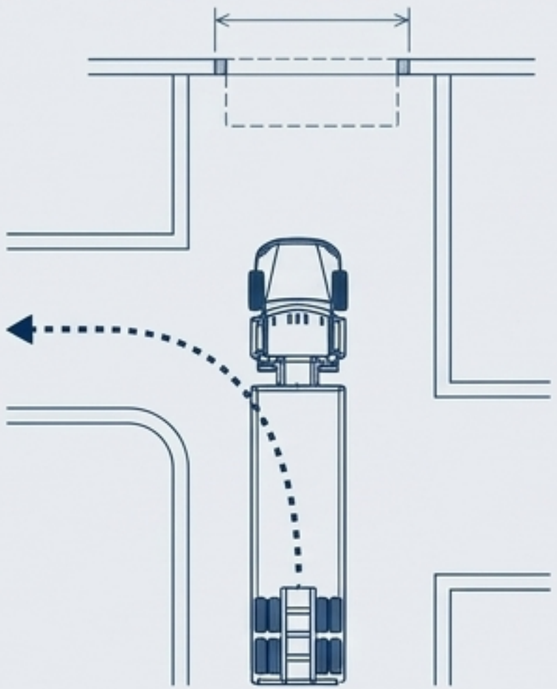
The ELDT Maneuver Matrix

	90-Degree Alley Dock	Offset Backing	Parallel Parking
Yard Application	Warehouse Docks	Staging Lanes	Street-Side Deliveries
Hinge Articulation Angle	Extreme (Up to 90°)	Moderate (30-45°)	Variable
Blind-Side Risk Level	Critical (Requires intense mirror/cam management)	Moderate	Low
Primary Fail Trigger	Over-steering the pivot	Misjudging the initial setup angle	Tandem curb strikes

Gemini Notebook

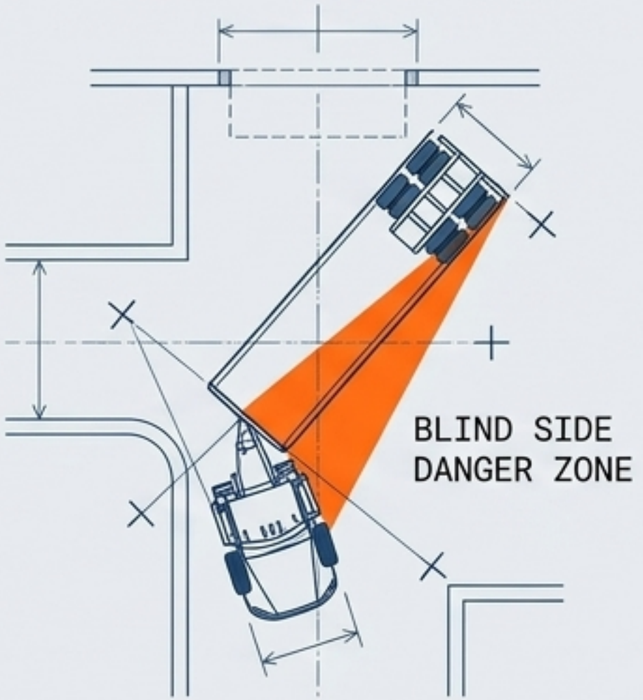
THE ULTIMATE SPATIAL TEST: 90-DEGREE ALLEY DOCKING

Phase 01: Setup



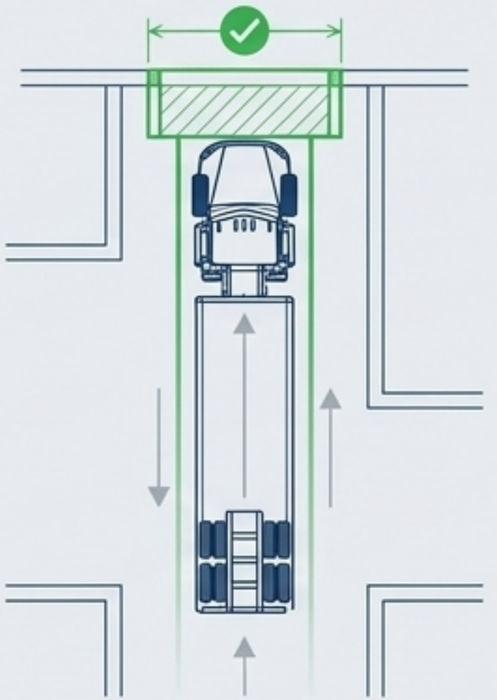
Establishes starting spatial constraints.

Phase 02: The Pivot



Maximum cognitive load and mirror management.

Phase 03: Final Push

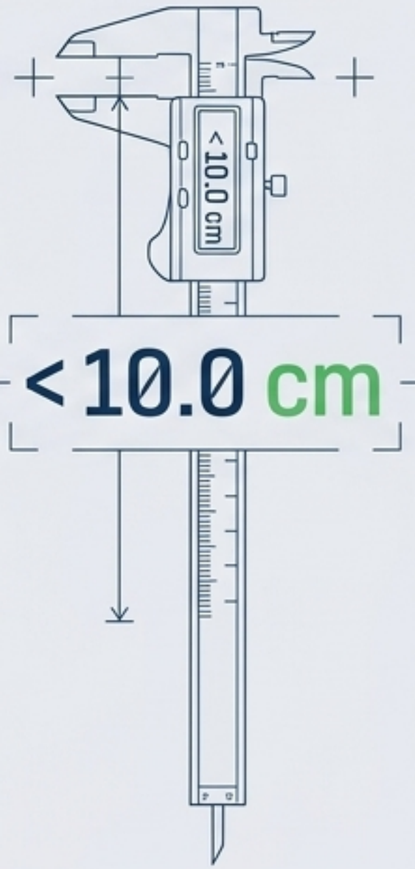


Micro-adjustments for strict placement tolerance.

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Enforcing the Sub-10cm Placement Tolerance





Federal Minimum

Requires the vehicle to be "sufficiently within boundaries" without crossing lines.

Game 02 Standard

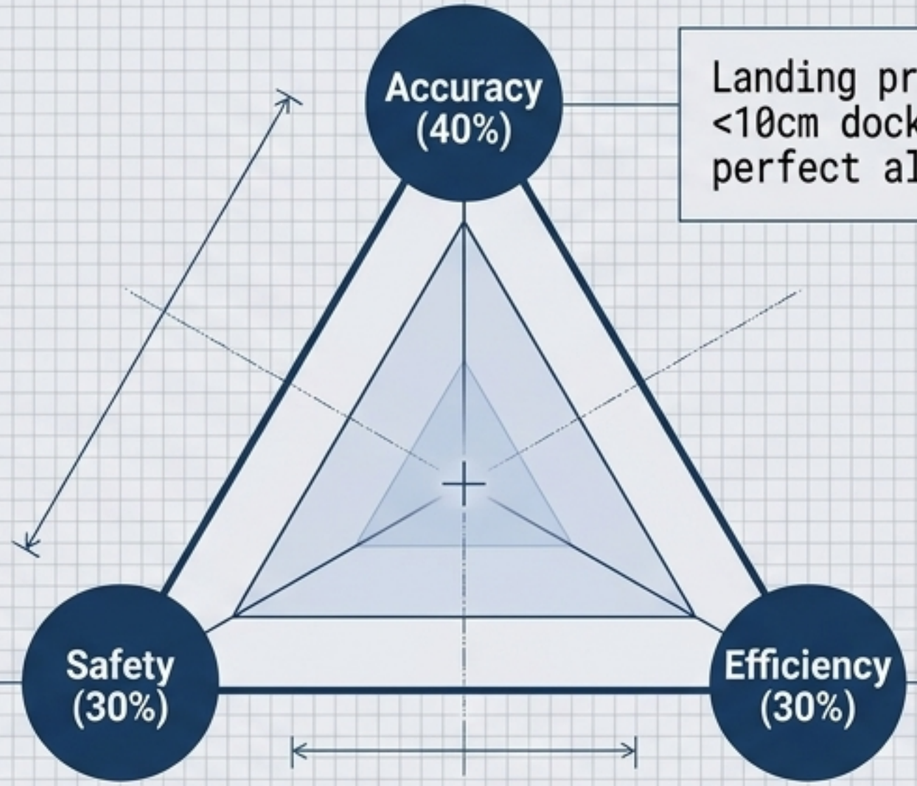
Enforces sub-millimeter tracking via strict collision meshes and geometric telemetry.

Behavioral Outcome

Forces continuous micro-adjustments, stripping away reliance on luck and building absolute control over tandem axles.

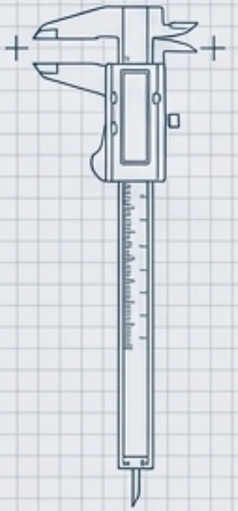
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The Performance Triad: Calibrating Driver Behavior



Accuracy (40%)

Landing precisely within the <10cm dock target with perfect alignment.



Safety (30%)

Maintaining mirror checks and registering zero physical impacts.

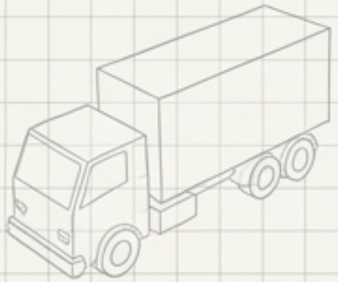
Efficiency (30%)

Time to execute the dock, minimizing wasted moves and unnecessary kWh battery drain.

Built-in tension perfectly mimics real-world dispatch pressure. Rushing for **Efficiency** mathematically degrades **Safety**. Excessive caution degrades **Efficiency**. Operators must optimize the exact center.

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Decision Mechanics: The GOAL and Pull-Up Penalty Scale



TRIGGER EVENT: Student Loses Visual Confirmation of Tandems

A

Initiate GOAL (Get Out And Look)

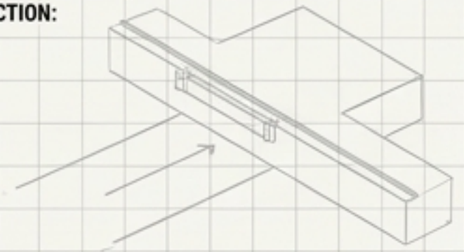
EFFICIENCY IMPACT: -2%

SAFETY IMPACT: 0%

Minor Efficiency deduction, but strictly preserves Safety score.

SCORE PROTECTION: MAXIMAL

SAFE CHOICE



B

Blind Reverse Guess

SAFETY IMPACT: -50 XP

COLLISION EVENT: CONFIRMED

Hits virtual cone/dock.

XP DEDUCTION: CRITICAL

Massive Safety penalty (Flags * 50 XP deduction).

HIGH-RISK CHOICE



C

Initiate Pull-Up

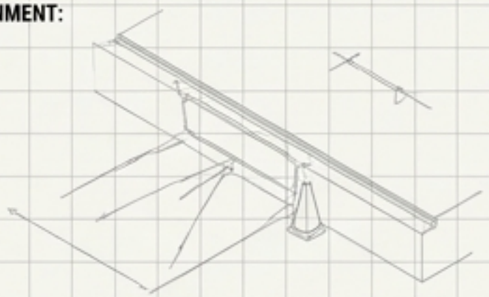
ACCURACY IMPACT: -1%

GEOMETRY RESET: COMPLETE

Minor Accuracy penalty, but resets pivot geometry.

PIVOT ALIGNMENT: RESTORED

CORRECTION



"We train the decision to stop, not just the ability to steer."

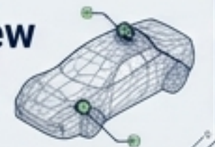
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The Esports Feedback Loop: Shrinking Time to Mastery

01 Attempt Maneuver
(Weekly 1v1 same-seed tournament bracket)

02 Instant HUD Telemetry Feedback
(Sub-millimeter performance data)

03 VOD Review
(Analyze exact failure points)



04 Adjust Pivot Geometry & Re-Attempt
(Apply cognitive corrections instantly)



50x

Gamers learn exponentially faster because they can safely fail 50 times in an hour with zero equipment cost, mapping the exact mathematical boundaries of failure securely.

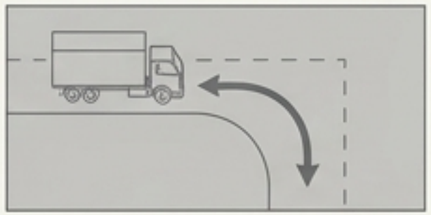
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Capability Scaling: Physical Yard vs. Esports Telemetry

Traditional Physical Yard

Repetition Rate

2-3 reps per hour



Risk Profile

High stress, high physical liability



Resource Burn

Heavy fuel/kWh waste, equipment wear



Feedback Latency

Subjective, delayed instructor feedback



Esports Simulator Phase

Repetition Rate

20+ reps per hour



Risk Profile

- Zero real-world risk,
- zero property damage



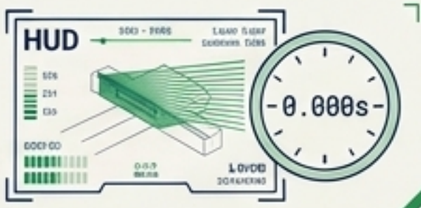
Resource Burn

Zero physical resource cost



Feedback Latency

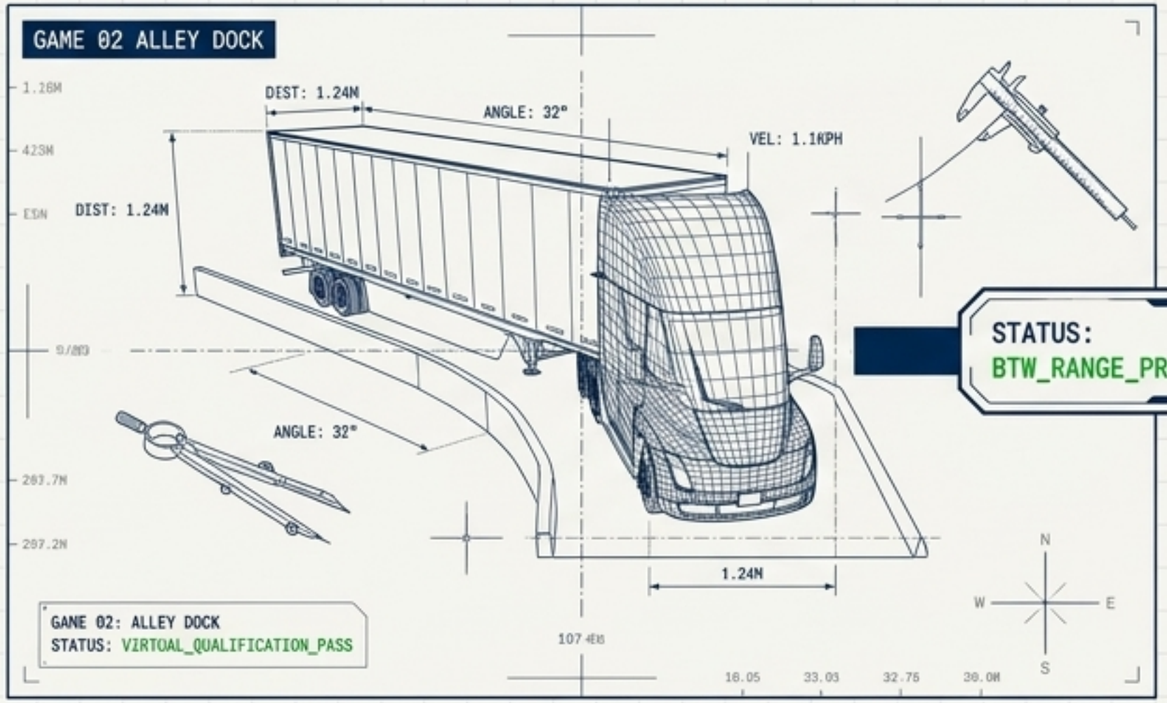
Objective, instant sub-millimeter telemetry



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From Blueprint to Reality: The Season 2 Transition

The Blueprint Grid



STATUS:
BTW_RANGE_PROFICIENCY_LOGGED

The Reality



Spatial mastery achieved in the simulator environment acts as a primer, directly accelerating the successful completion of federally mandated physical yard hours.

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The Output: Platinum Tier Certification Readiness

10,000 Total XP Earned

XP: 10,000

FMCSA ELDT Theory TPR Reported (80%+ Pass)

ELDT SCORE: >80%



Physical BTW Range & Road Proficient

STATUS:
PROFICIENT

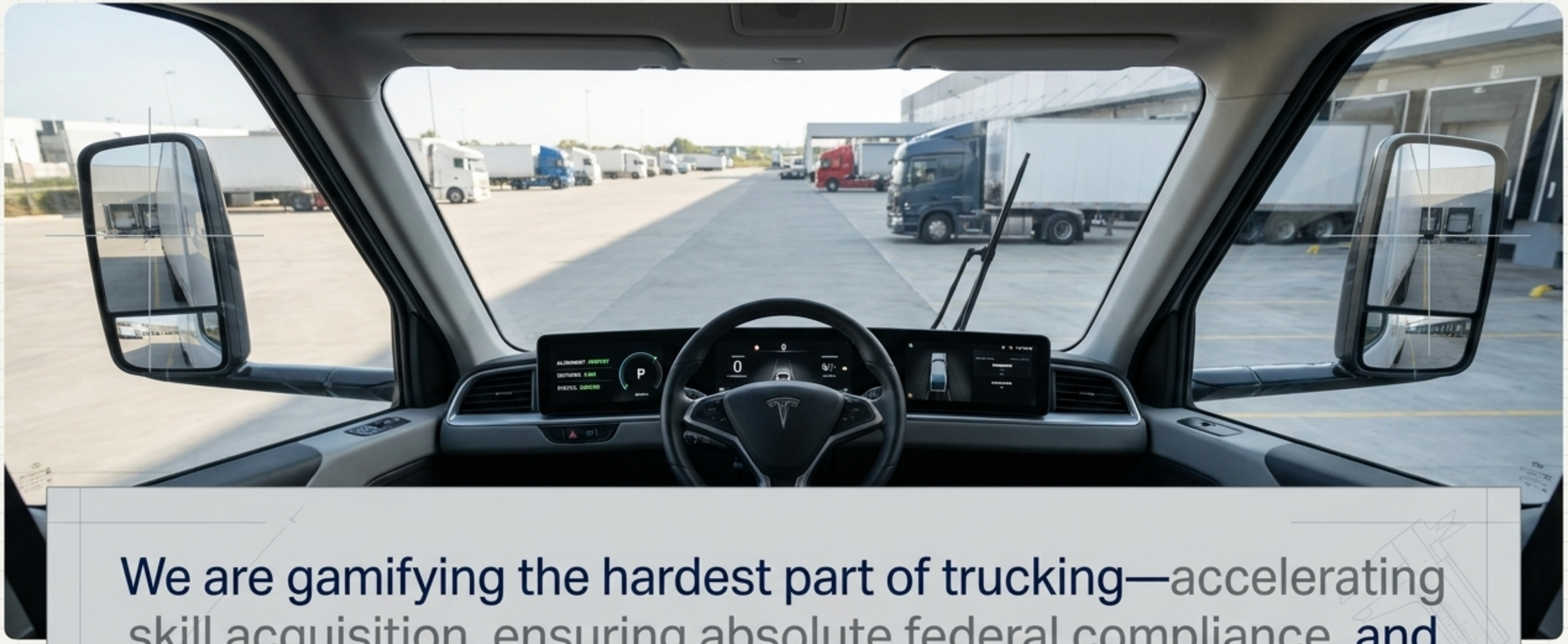
Zero Safety Flags in Finals

SAFETY FLAGS:
0

Dominating Game 02 unlocks the ability to efficiently crush the real-world BTW range, yielding an elite candidate ready for advanced remote operations or traditional fleet placement.

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Engineering the Future of Fleet Spatial Mastery



We are gamifying the hardest part of trucking—accelerating skill acquisition, ensuring absolute federal compliance, and producing operators with unparalleled spatial awareness.

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