

TRADING FIELD GUIDE · S13

The trading decision field guide

One order route, followed from the FIX NewOrderSingle and market-book snapshot to the venue fill, trader signature, client explanation, and settlement packet.

ORDER ROUTING

FIX 4.4

BEST EXECUTION

SETTLEMENT REPLAY



Not a generic AI catalogue. One order with its instruction, market book, venue rule, trader, fill, report, and settlement state kept together.

S13

CONTENTS

The trade, from client instruction to registry state

This field guide follows order ORD-4f9e. The FIX message, market snapshot, instrument and venue versions, route, trader authority, fill, report, CCP, CSD, and client answer remain connected.

PRIMARY READERS

trading decision field guide domain, operations and assurance teams

READING DEPTH

Sector specialist

DECISION THIS SUPPORTS

A capital-markets working book for brokers, venues, desks, risk, compliance, operations, clients, and supervisory teams.

01 The client question 03–04
Why this order reached this venue at this price and time

02 Order ORD-4f9e 05–09
Instruction, book, instrument, routing rule, trader, and fill

03 The market boundary 10–14
OMS, EMS, FIX, risk, reference data, reporting, and surveillance

04 The signed trade witness 15–18
Exact work, trust boundary, failure, and independent checking

05 The production decision 19
Acceptance corpus, operating record, sources, and next exercise

06 Subject index 17–18
An alphabetical finder for concepts, controls, products, and decisions.

HOW TO USE IT

Replace the illustrative order, book, venue, rule, trader, and settlement values with one firm-owned trade. Keep the record shape, but do not treat this book as investment advice, a best-execution conclusion, or a regulatory filing.

SOURCE DISCIPLINE

Dweve-specific facts are taken directly from the English website text audited 2026-07-20; web-navigation wording is humanised for print. Evaluation guidance is editorial, and scenarios and derived visuals are illustrative. Unsupported synthesis is replaced by canonical copy or omitted.

THE CLIENT QUESTION

The fill has a client and a supervisor behind it

A confirmation tells the client what filled. A defensible answer also tells the firm which instruction, book, rule, venue, authority, and downstream records produced that fill.

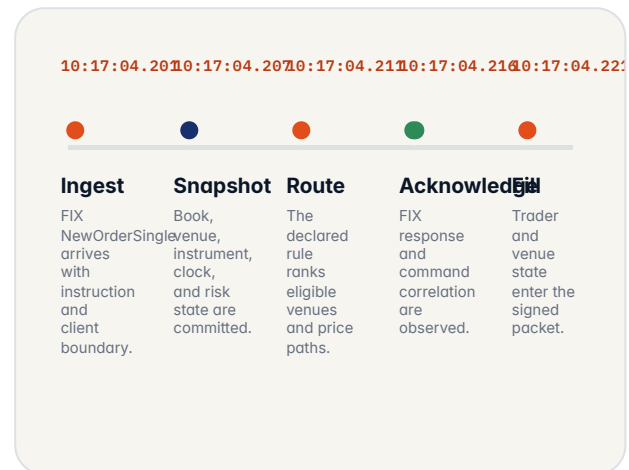
At 10:17:04.221 UTC, order ORD-4f9e asks for 25,000 shares of an illustrative instrument. The smart-order router sends the first slice to venue BVX rather than the primary Euronext Amsterdam book. The later question is why: the client instruction, available price and size, venue eligibility, routing rule NL-2026-H1 section 3.4, model or score, trader J. Pietersen, FIX acknowledgements, fill, and report must still agree.

One order is viewed by many authorities

The client owns the instruction. The desk owns execution within mandate. Risk can block. Compliance owns surveillance and reporting correction. Operations owns CCP and CSD reconciliation. A venue owns its acknowledgement and fill. A packet can connect these records without pretending one party owns all of them.

TRADING TEST

If a client challenge requires the desk to recreate the market book from a current feed, the firm has a trade log but not a replayable execution decision.

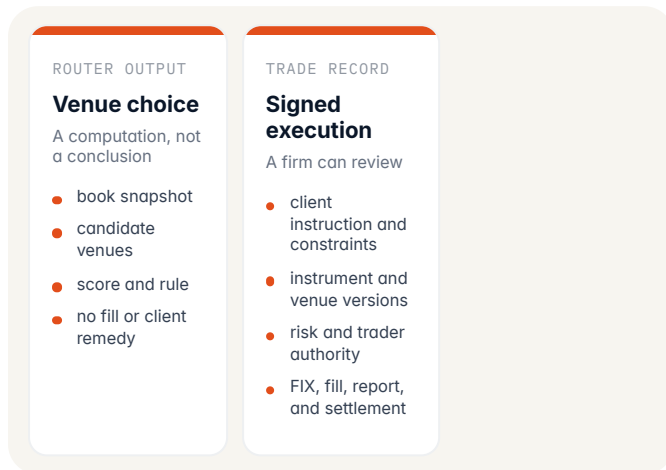


Latency makes the path short. It does not make its evidence optional.

THE DIFFERENCE BETWEEN ROUTE AND OUTCOME

Best execution is not a venue label

A smart-order router can select a venue deterministically while the firm still needs instruction, market, risk, authority, fill, and client-reason evidence.



The route belongs inside the trade record, not in place of it.

For ORD-4f9e, the illustrative answer is that venue BVX offered a 0.6 basis-point price improvement at arrival against the primary book under routing rule NL-2026-H1 section 3.4, and trader J. Pietersen confirmed the route. That statement still needs the book identity, side, size, currency, timestamps, venue eligibility, slippage method, fill, and report references that make it meaningful.

Keep five questions separate

- What did the client instruct, and what constraints were permitted?
- What market, instrument, venue, and clock state was available?
- Which routing or risk rule transformed that state?
- Who had authority to route, override, block, or explain?
- What did the venue, report, CCP, CSD, and client actually receive?

NO POST-HOC CERTAINTY

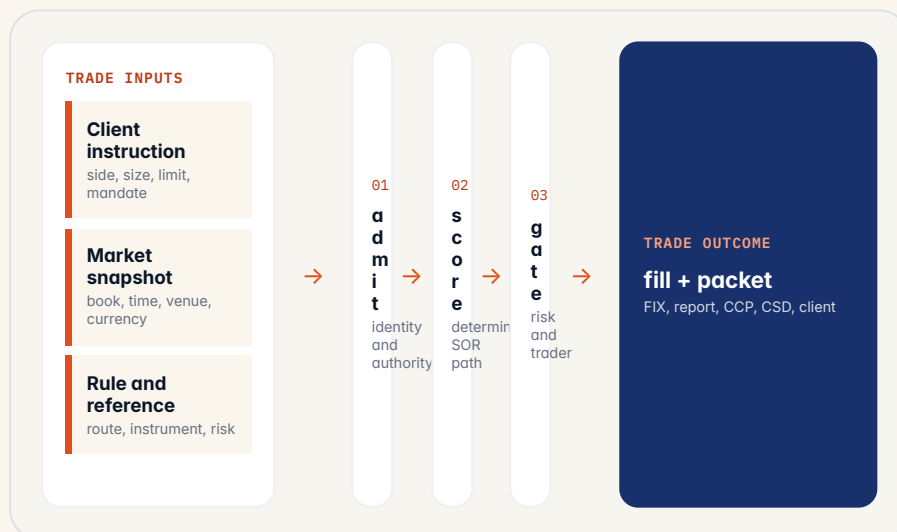
A reproducible venue score does not prove the market snapshot was complete, the strategy was suitable, or the execution met every applicable obligation.

01

ORDER ORD-4F9E

Pin the market before the route runs

The trade is fast because its fields are already typed. Order intent, market data, reference data, risk, authority, and downstream effects remain distinct inputs.



The route has an intent boundary, a market boundary, an authority boundary, and a settlement boundary.

FIX, CLIENT BOUNDARY, AND MARKET TIME

ORD-4f9e has one instruction identity

The first trading control is knowing exactly which order, client instruction, market window, and instrument the firm is explaining.

ORD-4f9e is a pseudonymous order reference in this edition. A live implementation should correlate the FIX NewOrderSingle, order-management state, venue acknowledgements, fills, client confirmation, and report without copying full client identity into every low-latency component.

Freeze what was actionable then

A current order book is not the book at arrival. The record needs message identity, clock source, sequence and latency, side and size, currency, instrument and venue master versions, rejected or hidden fields, and the relation to the desk and risk state. Market data quality is an execution input defect, not a footnote in a report.

- FIX message identity, client instruction, purpose, side, size, limit, and time-in-force
- book snapshot, venue candidates, instrument, currency, market-data sequence, and freshness
- desk, mandate, risk limit, trader or automated authority, and clock relation
- correlation to acknowledgements, fills, transaction report, CCP, CSD, and confirmation
- minimum client and strategy context needed for the selected best-execution path

order.identity

BOUND

Order

ORD-4f9e · 25,000-share client instruction

order.message

PINNED

FIX

NewOrderSingle 4.4 with desk correlation

market.snapshot

COMMITTED

Book

Primary and dark venue quotes at arrival

reference.lane

DECLARED

Reference

Instrument, currency, venue, and rule versions

fill.correlation

RECONCILED

Fill

Venue execution plus client confirmation

CLIENT-DATA BOUNDARY

The execution packet should be sufficient for its purpose. It should not become a second client, strategy, or order-history warehouse.

INSTRUMENT, VENUE, AND MANDATE APPLICABILITY

A venue rule is also a reference-data decision

Replay needs more than the routing-rule filename. It needs the exact instrument, venue, market, client, risk, and authority conditions under which the rule could operate.



Client instruction, reference data, market state, routing rule, and authority are separate resolution steps.

Spindle can retain admitted atoms for venue selection, instrument reference, routing policy, and execution reports. Charter can represent policy ownership and change authority. The firm still decides which venue masters, market feeds, mandate, and MiFID lane are admissible for this order.

A replacement venue must not rewrite old trades

When a venue closes, a MIC changes, or routing rule H2 replaces H1, the new state may govern future orders. It must not overwrite the evidence needed to explain ORD-4f9e. Historical replay should resolve the original venue and instrument state, including a rejected or dark-venue candidate.

DESK-OWNED QUESTION

Can the execution owner point from the confirmation to the exact instruction, book, venue list, rule, mandate, and effective state used for the route?

INTEGER PATH, ORACLE, AND FILL REALITY

Price and slippage are exact work

The website describes deterministic order-book work, integer arithmetic, MPFR 256-bit checking, property tests, and 0 ULP claims. A trading proof must connect those engineering properties to actual instruments, feeds, venues, and latency.

The best-execution path can keep the existing OMS, EMS, and FIX gateways while adding a decision layer that records every order, rule, and trader action as the fill happens. The numeric boundary still needs declared units, rounding, price and quantity representation, market-data sequence, runtime, and a measure of end-to-end latency.

Illustrative routing witness

```
order = ORD-4f9e
side = buy · quantity = 25_000 · currency = EUR
book = market://AMS/arrival-10:17:04.207
instrument = reference://NL-EQ-742
rule = routing-rule-NL-2026-H1-3.4.pdf
candidates = [Euronext-AMS, BVX]
score = deterministic_integer_path(price, size, cost,
likelihood)
selected = BVX · improvement = 0.6 bps
method = declared units + rounding + clock + runtime
```

The values are illustrative. The firm owns the book, method, tolerance, and suitability boundary.

NUMERIC
BOUNDARY

Exact work

- price and quantity units
- rounding and intermediate state
- book ordering and sequence
- oracle and property fixtures
- latency distribution

MARKET
BOUNDARY

Execution work

- feed completeness and clock
- venue eligibility and capacity
- risk and mandate authority
- FIX and fill outcome
- client and reporting effect

A deterministic calculation can be exact while the market around it remains partial or adversarial.

REFUSAL CONDITION

If the book is stale, the instrument or venue is unresolved, the mandate is unavailable, or the fill receipt is unknown, the route must block, cancel, or reconcile instead of pretending a normal execution occurred.

NO SHADOW TRADING ESTATE

OMS, EMS, and FIX remain in charge

The decision layer wraps the existing execution estate. The broker, venue, risk system, reporting stack, CCP, and CSD remain authoritative for their own state.



The integration is explicit ownership and trust boundaries, not a parallel OMS.

The first proof should sit beside one execution workflow. The firm chooses FIX, REST, or gRPC surfaces, identity, clocks, co-location, archives, and command controls. The proof records payload references, replay protection, duplicate-fill handling, venue timeouts, and the distinction between accepted, routed, partially filled, filled, cancelled, and unknown.

Keep the order path boring

- one stable correlation across client, OMS, EMS, FIX, venue, fill, report, CCP, and CSD
- idempotency and duplicate-command protection
- receipt that distinguishes accepted, applied, rejected, partial, and unknown
- reconciliation between fill, confirmation, report, margin, settlement instruction, and registry state

INTEGRATION ACCEPTANCE

A packet is incomplete when it says the router sent an order. It is complete when the firm can say what the venue, client, report, CCP, and CSD did.

RTS 22, SURVEILLANCE, CCP, AND CSD

A fill becomes a report and then a settlement obligation

The trading decision does not end at the venue. Reporting, surveillance, clearing, margin, settlement, and client confirmation each add state and ownership.

For ORD-4f9e, the venue fill is one fact.

Transaction reporting needs instrument, venue, trader, client, price, quantity, timestamps, and schema. Surveillance needs order and fill pattern. The CCP needs a submitted trade and margin state. The CSD needs a settlement instruction and later registry result. These are connected consequences, not one interchangeable status.



A shared packet links lifecycle records without claiming that the venue, firm, CCP, or CSD has one authority.

Questions the post-trade path must answer

- Which client order, fill, venue, instrument, trader, and market state are being reported?
- Which MiFID, SFTR, MAR, DORA, venue, and record versions were active?
- Did enrichment transform or drop a field, and can the original FIX and book be retrieved?
- What happens when the report, client confirmation, CCP state, and settlement registry disagree?
- Which owner can correct the report, dispute the fill, or remediate the settlement fail?

POST-TRADE BOUNDARY

Deterministic report generation can show how fields were derived. It does not make an accepted report, cleared trade, or settled position true by itself.

AUTOMATION, OVERRIDE, AND CLIENT CONSEQUENCE

The trader, risk officer, and compliance owner are distinct

A permitted mandate may automate a route. The record still needs to show when automation acted, when risk blocked it, and who owned the execution and explanation.



The desk gate needs meaningful choices, not only an approve button beside a finished score.

What the reviewer must be able to inspect

- the instruction, market and reference facts that materially affected the route
- the rule, venue list, risk limit, client mandate, and excluded or conflicting state
- the score, numeric method, runtime, clock, and latency budget
- the expected fill, client communication, reporting, clearing, and settlement consequences
- the consequences of accepting, changing, blocking, cancelling, or refusing

The action needs timestamp, identity, desk, role, authority, reason, command correlation, and relation to the recommendation. "Trader reviewed" is not enough. Distinguish automated, accepted, changed, blocked, cancelled, escalated, and refused.

02

SIGNED TRADE WITNESS

Make the fill portable and checkable

The witness is smaller than the trading estate and stronger than a confirmation screenshot. It binds order intent, market state, route, authority, fill, report, and settlement references.

ORDER ORD-4F9E · WITNESS		From NewOrderSingle to CSD state	
01	CLIENT INSTRUCTION what the firm was asked to do	client / desk	committed
02	BOOK + REFERENCE SNAPSHOT what market and venue state existed	data owner	effective
03	ROUTE WITNESS how venues were compared	method owner	verified
04	TRADER OR RISK RECEIPT who accepted or blocked it	desk / risk	signed
05	FILL + REPORT what venue and supervisor received	venue / compliance	correlated
06	CCP + CSD REFERENCES what post-trade state followed	operations	reconciled

Each link answers a different question. No single signature makes the market book or settlement state true.

AION, FIX, AND INDEPENDENT REPLAY

The certificate checks the route, not the market

A client, compliance reviewer, or supervisor may need to verify a selected execution outside the process that produced it.

AION's portable decision-certificate concept can give ORD-4f9e a proof surface that travels with the selected trade packet. It can commit to the instruction, admitted book and references, evaluated route, trader or risk receipt, fill, and verifier material. It does not certify market fairness, client suitability, venue integrity, or a regulator's conclusion. It makes the declared route and execution evidence checkable under the supported format.

EVIDENCE CHAIN		From event to review	
01	SOURCE COMMITMENTS order, book, venue, and instrument are identified	data owners	hash + time
02	EVALUATED ROUTE the candidate and rule path are explicit	execution runtime	recorded
03	NUMERIC COMPARISON declared profile matches oracle	method owner	re-run
04	TRADER OR RISK RECEIPT authority saw and acted	desk / risk	signed
05	FILL AND POST-TRADE REFERENCES the trade lifecycle is correlated	operations	observed

The independent check separates the packet from the router that assembled it.

What the certificate does not do

- It does not make incomplete or manipulated market data trustworthy.
- It does not prove a venue was suitable for every client or order.
- It does not replace model validation, risk limits, compliance review, or settlement controls.
- It does not prove a client understood a fill explanation merely because it was delivered.

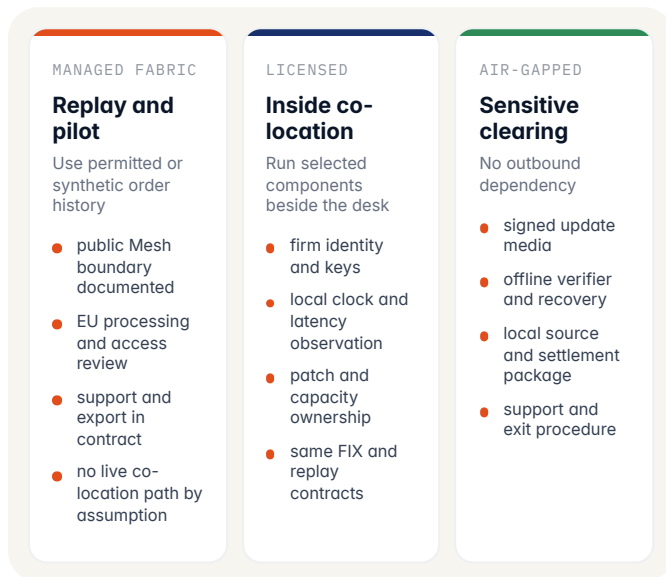
INDEPENDENT REVIEWER QUESTION

Can the reviewer check ORD-4f9e with the retained packet and verifier, without giving the verifier permission to route, cancel, or alter the trade?

MANAGED, LICENSED, OR AIR-GAPPED

Co-location is part of the execution control

The three operating postures can share APIs, trace format, and replay packets while carrying different latency, egress, key, support, update, and recovery responsibilities.



A posture is a hypothesis until the firm measures its actual network, clock, and recovery path.

The trading website description describes managed Fabric on the public Mesh, licensed operation in the firm's co-location, and air-gapped operation for sensitive clearing data. The proof should preserve one typed integration contract while measuring actual FIX, clock, key, market-data, package, support, capacity, incident, and restore conditions in each posture.

Posture-specific evidence

- Managed: processing boundary, access, subprocessor, retention, incident path, export, and continuity.
- Licensed: co-location node ownership, local keys, time sync, updates, support, capacity, and patch responsibility.
- Air-gapped: signed media, offline dependencies, local verifier, settlement data boundary, recovery, and no-egress test.

NO IDENTICAL-RISK CLAIM

If the same route is promised across postures, prove that the semantic packet, latency scope, authority band, and failure behaviour remain intact. Do not assume identical execution risk.

THE ACCEPTANCE CORPUS

Run the proof against trade edges

A credible trading proof includes clean fills, market and reference defects, venue failure, client constraints, reporting correction, surveillance, margin, and settlement cases that should stop.

CORPUS SLICE	INCLUDE	EXPECTED OBSERVATION
Normal order	fresh book, eligible venue, within mandate	fill, confirmation, and packet close
Rule transition	routing rule or venue master changes	historical route remains resolvable
Market defect	stale book, sequence gap, clock skew, bad reference	hold or refusal names the defect
Risk boundary	limit denial, client restriction, trader override	authority and rationale are visible
Venue fault	reject, timeout, duplicate command, partial fill	FIX and target state reconcile safely
Post-trade	report correction, STOR review, CCP margin, CSD fail	owner and lifecycle state remain linked
Resilience	restore, offline replay, co-location dependency loss	unknown state and recovery repeat
Abuse	cross-client access, FIX replay, privilege misuse	denied, correlated, and investigated

The corpus is part of the execution decision. A profitable happy path alone is not acceptance.

Measure what a later reviewer can check

- instruction, market, reference, and clock quality at order arrival
- candidate ordering, exact score, oracle comparison, and end-to-end latency
- rule, mandate, risk, trader, venue, and client-reason alignment
- FIX, fill, report, surveillance, CCP, CSD, and confirmation reconciliation
- packet completeness, integrity check, retrieval time, and offline verification
- segmentation, access denial, incident record, restore outcome, and export

Do not lead with an average fill rate detached from order type, market state, or client instruction. Record raw events, expected references, failed assertions, partial and unknown states, and reviewer conclusions. A firm needs evidence a successor can inspect, not a performance number without its market context.

GO, NARROW, HOLD, OR STOP

The firm decides whether to proceed

A proof ends with a recorded trading decision, not with the last successful fill.

The desk, risk, compliance, operations, security, legal, client service, procurement, venue, and affected-client owners may each own a different production condition. They decide the order workflow, instrument and client scope, market and latency boundary, rules and references, automation band, human gates, reports, clearing, settlement, retention, support, recovery, and exit state.

TRADING PRODUCTION RECORD	Order ORD-4f9e proof decision	
WORKFLOW	Best-execution venue selection and fill	BOUNDED
SCOPE	Named instrument, venue, desk, client lane, and cohort	SCOPED
EVIDENCE	Instruction + book + rule + trader + fill + report	LINKED
AUTHORITY	Mandate + risk + override + cancellation	REVIEWED
POST-TRADE	Confirmation + report + CCP + CSD reconciliation	OWNED
EXIT	Export, verifier, transition, and rollback condition	DATED
DECISION	Go / narrow / hold / stop	SIGNED
The signed record should remain understandable after the desk, implementation team, and original reviewers have moved on.		

The smallest credible next step

Run ORD-4f9e and a deliberately chosen boundary set beside the existing OMS, EMS, FIX, risk, reporting, CCP, and CSD estate. Make the desk owner, risk owner, compliance owner, operations owner, security owner, and client-service owner review the same packet. If they cannot answer their different questions without reconstruction, narrow the proof until they can.

PRIMARY ACCEPTANCE CRITERION

The firm can identify the exact instruction, market and reference state, route, rule, authority, fill, client reason, report, post-trade state, and replay result for every selected order.

That is a credible beginning. It is not permission to generalise one best-execution proof to every instrument, client, venue, strategy, market, report, or regulatory duty.

FIND A SUBJECT

Subject index

Page references point to the substantive explanation, worked example, control, boundary, or decision record, not merely to a passing label.

A Acceptance criteria 9, 15–16	A AION 9, 13	A Air-gapped deployment 14
A Appeal and challenge 3	A Authority 3–8, 10–16	A Availability 7
B Boundaries 3, 5–6, 8–10, 14–16	C Capabilities 11	C Charter 7
C Compliance 3, 11–13, 16	C Continuity 14	C Contracts 14
C Cost and budgeting 7–8, 11	D Data custody 12	D Dependencies 14–15
D Determinism 5, 8, 10	E Evidence 3–4, 7, 9, 13–16	E Exit 14, 16
F Fabric 9, 14	F Failure 14–15	I Identity 4–6, 9, 11, 14
I Incident response 14–15	I Inputs 6	I Integration 9, 14
K Keys and signing 12	L Ledger 16	L Limits and exclusions 9, 13
L Loom 9	M Mesh 14	M Models and solvers 3, 13
N Nexus 9	O Operations 14	O Outputs 4
O Ownership 7, 9–16	P Performance 15	P Policies 7

SUBJECT INDEX CONTINUED

Subject index · P–W

Terms are grouped alphabetically. Consecutive page references are collapsed into ranges.

P Pricing 3–4, 7–8, 10	P Procurement 16	P Proof 8–9, 13–16
R Recovery 14–16	R Replay 7, 9, 13–16	R Responsibility 14
R Retention 14, 16	R Risk 3–16	R Rules 3–8, 11, 13, 15–16
S Security 16	S Sources 6, 13–14	S Sovereignty 3, 6–9, 11, 13–14
S Spindle 7, 9	S State 3–4, 6–12, 15–16	T Testing 3, 14
T Trace 14	T Trading 3, 6, 8–10, 12, 14–16	V Validation 13
V Verification 13, 15	V Versioning 10	W Workflows 9, 16

CLOSING RECORD

Start with the fill you most dread explaining

Choose one execution workflow, name its authorities, and make the answer retrievable before the client, supervisor, or settlement dispute asks for it.

Write the order identity, client instruction, market and clock boundary, instrument and venue versions, routing and numeric witness, mandate and risk state, trader or automation authority, FIX and fill receipts, client reason, report, surveillance, CCP, CSD, verifier, deployment posture, recovery, retention, export, and stop conditions.

Then choose the difficult test: a stale book, reference change, venue rejection, partial fill, risk block, trader override, duplicate command, reporting correction, suspicious-order review, margin change, settlement fail, client complaint, or co-location restore. A field guide is useful when it makes the hard trade state concrete enough to run.

ORDER

One bounded route, fill, report, or settlement decision

Do not begin with the entire desk

SOURCE

Instruction, book, reference, rule, venue, and target

Each has an effective state

AUTHORITY

Client, desk, risk, compliance, operations, and venue owners

Roles stay distinct

EVIDENCE

FIX, route, fill, report, CCP, CSD, and packet

Observed state matters

DECISION

Go, narrow, hold, or stop

Signed with rollback and review triggers

THE TRADING STANDARD

A venue choice can be recalculated. A defensible execution record also shows the instruction, market book, reference state, rule, authority, actual fill, client explanation, reporting, and settlement evidence that existed when the firm acted.