

ADVUMAN — UK-India CETA Sprint

6-Week Execution Plan | Quantitative Methodology Implementation

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Primary Focus: Quant Implementation + Signal QA + Briefing Synthesis + R&D; Coordination

CRITICAL: What You STOP for 6 Weeks

Activity	Current State	Decision
UK-Vietnam recruitment	Active	PAUSE — revisit Week 7
UK-Egypt QA	Nightly, 90+ signals	REDUCE — 2x/week only
R&D deep reading	36 papers	FOCUS — only implementation-relevant

What You Focus On

Priority	Activity	Time
1	Quant methodology implementation (z-score, EWMA, CUSUM, attribution)	40%
2	UK-India signal QA + briefing synthesis	35%
3	R&D coordination (implementation-focused only)	15%
4	Process documentation	10%

QUANTITATIVE METHODOLOGY —

Implementation Spec

Stage 1: Weighted Signal Scoring (Week 1-2)

Source: GSCPI (NY Fed) + Dempster-Shafer discounting

Formula:

$$\text{Weighted Score} = \text{Delta} \times \text{SourceWeight} \times \text{StatusWeight} \times \text{ConfidenceWeight} \times \text{PrecedentWeight}$$

Weight Matrix:

Factor	Value	Weight	Rationale
Source Layer	Primary	1.0	DGFT, HMRC, Port authorities
	Logistics	0.8	Maersk, Felixstowe bulletins
	Market	0.7	FX, commodity prices
	Industry	0.6	Trade publications, UKFT
Event Status	Enforced	1.0	Already in effect
	Announced	0.7	Confirmed, not yet active
	Draft	0.4	Proposed, may change
Confidence	High	1.0	Verified, primary source
	Medium	0.7	Secondary confirmation
	Low	0.4	Single source, unverified
Precedent	No (novel)	1.2	First occurrence, higher attention
	Yes (known)	1.0	Historical pattern

Example Calculation (from OSINT log):

DGFT Interest Subvention (Feb 1): $\text{Delta}=-1 \times \text{Source}=1.0 \times \text{Status}=0.4 \times \text{Conf}=1.0 \times \text{Prec}=1.0 = -0.4$

Felixstowe Storm (Feb 4): $\text{Delta}=+1 \times \text{Source}=0.8 \times \text{Status}=1.0 \times \text{Conf}=1.0 \times \text{Prec}=1.0 = +0.8$

Stage 2: Z-Score Standardization + EWMA Baseline (Week 3-4)

Source: GSCPI + RiskMetrics + Montgomery

Z-Score per Index:

$$z_t = (x_t - \mu_t) / \sigma_t$$

EWMA Rolling Mean:

$$\mu_t = \lambda \cdot x_t + (1 - \lambda) \cdot \mu_{t-1}$$

EWMA Rolling Variance:

$$\sigma_t^2 = \lambda \cdot (x_t - \mu_t)^2 + (1 - \lambda) \cdot \sigma_{t-1}^2$$

Lambda Selection (PENDING EXPERT CONSULTATION):

Half-life (H)	Lambda	Interpretation	Use Case
7 days	0.095	Recent signals dominate	High-frequency disruptions

14 days	0.048	Moderate decay (DEFAULT)	General trade signals
30 days	0.023	Slow decay, stable baseline	Regulatory changes

Half-life formula: $\lambda = 1 - 2^{(-1/H)}$

Stage 3: CUSUM Detection for RPI (Week 3-4)

Source: Montgomery Ch. 9 + Ergashev comparison

Upper CUSUM:

$C_{+_t} = \max(0, C_{+_{t-1}} + z_t - k)$

Lower CUSUM:

$C_{-_t} = \min(0, C_{-_{t-1}} + z_t + k)$

Parameters:

Parameter	Value	Source/Rationale
Parameter	Value	Rationale
k (reference)	0.5	Standard for 1-sigma shift detection
h (control limit)	4-5	Balances sensitivity vs false alarms
C+_0, C-_0	0	Initial conditions

Index-Method Mapping (from Ergashev):

Index	Primary Method	Rationale
RPI	CUSUM	Volatile, detects persistent small shifts
LPI	EWMA	Smoother, recent weighting appropriate
CPI	EWMA	Cost shocks propagate then stabilize

Stage 4: Contribution Decomposition (Week 5-6)

Source: GSCPI contribution methodology

Attribution Formula:

$\% \text{ by Factor} = \frac{\text{SUM}(\text{signals_factor} * \text{weight})}{\text{SUM}(\text{all_weighted_signals})}$

Attribution Dimensions:

- By Source Layer: Primary % | Logistics % | Market % | Industry %
- By Impact Pathway: Cost % | Time % | Compliance % | Availability %
- By Jurisdiction: India % | UK % | Bilateral %

PHASE-BY-PHASE IMPLEMENTATION

PHASE 1: WEIGHTED SCORING (Week 1-2)

Goal: Move from +1/-1 to defensible weighted scores.

Task	Deadline	Output
Pause UK-Vietnam recruitment	Day 1	Done
Brief OSINT team: UK-India only	Day 2	Team aligned
Finalize weight matrix with R&D	Day 3	Weight doc signed off
Rescore all 30 UK-India signals	Day 5	Rescored spreadsheet
Validate weighted scores vs intuition	Day 7	Validation report
Implement z-score calculation	Day 10	Working code
Contribution decomposition logic	Day 12	Attribution code
Reduce UK-Egypt QA to 2x/week	Day 7	Schedule set

HARD GATE (Day 14): Weighted scoring + z-score calculation working. Attribution logic implemented.

PHASE 2: EWMA BASELINE + CUSUM (Week 3-4)

Goal: Implement rolling baseline. Show deviation in sigma units.

Task	Deadline	Output
Implement EWMA baseline ($\lambda=0.048$)	Day 18	Rolling baseline code
Implement CUSUM for RPI	Day 20	CUSUM tracking code
Synthesize Briefing #1 WITH metrics	Day 20	3 briefings ready
QA: verify every signal	Day 20	Zero unverified claims
Collect pilot feedback on metrics	Day 24	Feedback documented
Adjust methodology based on feedback	Day 26	Adjustments logged
Synthesize Briefing #2 with deviation	Day 27	3 briefings ready

HARD GATE (Day 28): Pilots see σ deviation from baseline. At least 1 confirms value.

PHASE 3: ATTRIBUTION + DOCUMENTATION (Week 5-6)

Goal: Full attribution in briefings. Document methodology.

Task	Deadline	Output
Full attribution in Briefing #3	Day 34	3 briefings with attribution
Finalize delivery SOP	Day 36	SOP document
Document methodology for pilots	Day 38	Methodology brief
R&D checkpoint: λ validation	Day 40	Lambda recommendation

HARD GATE (Day 42): 9 briefings with full quant methodology. SOP documented. Lambda validated or flagged.

SAMPLE PILOT OUTPUT (Week 6)

UK-INDIA TEXTILE LANE – Weekly Intelligence Brief
Week of February 23, 2026

LANE METRICS (14-day EWMA baseline, lambda=0.048)

Index	Current	Baseline	Deviation	Trend
RPI	+4.2	+2.1	+1.9 sigma	UP +0.3/wk
LPI	+2.8	+1.5	+1.4 sigma	STABLE
CPI	-0.4	+0.2	-0.8 sigma	DOWN

RPI ATTRIBUTION (this week's movement)

By Source: Primary 72% | Industry 28%

By Pathway: Compliance 85% | Cost 15%

By Jurisdiction: India 60% | UK 40%

CUSUM STATUS (persistent shift detection)

RPI: C+ = 3.2 (approaching h=4 threshold)

Small upward pressure accumulating since Feb 1.

TOP CONTRIBUTING SIGNALS:

- DGFT IEC Module Migration (Feb 5) -- +0.8 weighted
- HMRC Commodity Code Update (Feb 5) -- +0.6 weighted
- UKFT Labelling Guidance (Feb 5) -- +0.4 weighted

Team Direction

Team	Week 1-2	Week 3-4	Week 5-6
Manual OSINT	UK-India signals only	Continue collection	Continue + QA support
Tech	Pause Egypt scraper Scope UK-India sources	UK-India scraper v0.1	Automation support
R&D	Weight validation Z-score implementation	EWMA/CUSUM implementation	Lambda validation Methodology doc

Open Questions (Track During Sprint)

- Optimal lambda per index — consult economists (target: Day 40)
- Should indices cross-correlate? (e.g., LPI feeding CPI) — defer to Phase 2
- NSR threshold calibration — requires 6+ months data, defer
- Dempster-Shafer fusion — not essential for MVP, revisit when >5 signal streams