IMPLEMENTATION BLUEPRINT

Technology-Enabled Compliance for Cross-Border Payments

A practical guide to designing compliance checks, policy-as-code, real-time monitoring, case management, audit evidence and secure payment controls.



CORE PRINCIPLE

Compliance is not a check performed after money moves. It is an enforceable decision layer inside onboarding, funding, routing and payout.

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Implementation blueprint | August 2026

Implementation guidance only. Jurisdiction-specific obligations require qualified legal and compliance approval.

Why compliance must be engineered

Code moves money. Compliance determines whether the platform is permitted to move it, under what conditions, and with what evidence.

Design objective

Convert approved obligations and policies into versioned, explainable, testable and auditable controls - without turning every low-risk payment into a manual review.

Business outcomes

- Protect licences, banking relationships and access to payment rails.
- Stop prohibited parties, restricted corridors and suspicious activity before payout.
- Reduce false positives by applying stronger controls where risk is higher.
- Produce defensible evidence for regulators, auditors and partner reviews.
- Give analysts one investigation workspace instead of spreadsheets and inboxes.

Ownership chain

1. LAW & GUIDANCE
Applicable regulator and licensing obligations

↓

2. APPROVED POLICY
Compliance defines risk appetite and procedures

↓

3. SOFTWARE CONTROL
Engineering implements rules and state gates

↓

4. OPERATING EVIDENCE
Decisions, cases, reports and audit trail

Five control pillars

Governance
Named compliance officer, approved policies, training and independent review.

Risk assessment
Customer, product, geography, channel, partner and transaction risk.

Preventive controls
KYC/KYB, sanctions screening, limits, approval gates and restricted routes.

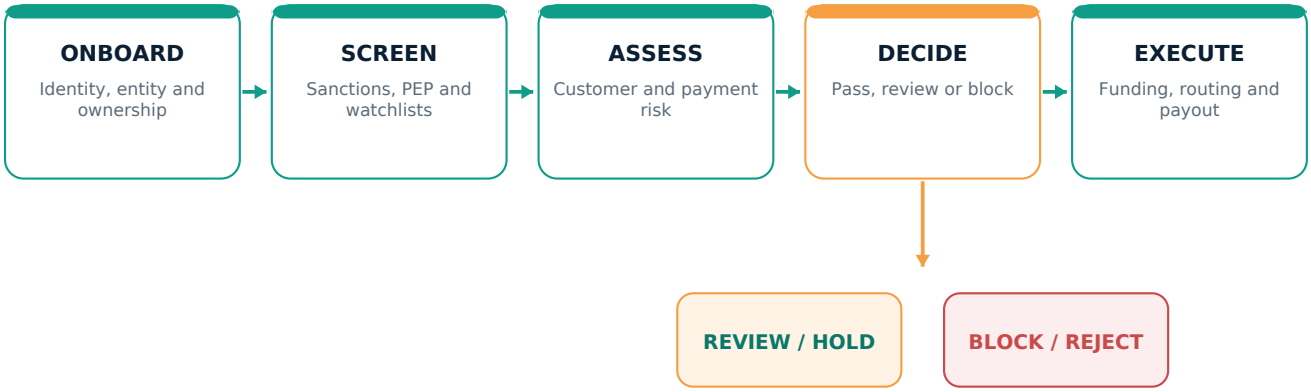
Detective controls
Ongoing monitoring, alerts, case investigations and reconciliation.

Evidence
Immutable logs, policy versions, report lineage and retained records.

Reference: FATF risk-based approach [1][2]; FINTRAC compliance program requirements [3][4].

Compliance decision architecture

Use a dedicated orchestration layer that evaluates every relevant party and transaction before the payment service can advance.



Platform components

Component	Responsibility	Key output
Compliance API	Single entry point for onboarding, screening and payment evaluation.	Decision ID and status
Policy engine	Evaluates versioned jurisdiction, corridor, product and risk rules.	Matched rules and reasons
Provider adapters	Normalises KYC/KYB, sanctions, PEP, adverse media and device providers.	Stable internal result schema
Event monitor	Consumes customer, beneficiary, wallet and transaction events.	Alerts and risk signals
Case service	Investigation, evidence requests, maker-checker approval and escalation.	Case outcome
Reporting service	Creates report drafts, validates required fields and tracks deadlines.	Submission evidence
Audit store	Append-only decision, user-action, policy and provider-response lineage.	Reconstructable history

Enforce the state machine

```
DRAFT -> CHECKING -> PASS -> FUNDED -> ROUTED -> PAID
                          |-> REVIEW_HOLD
                          |-> BLOCKED
```

Database constraints and service authorization must prevent REVIEW_HOLD or BLOCKED payments from reaching a payout adapter.

KYC, KYB and risk onboarding

Build a complete customer picture before activation, then keep it current through event-based and periodic reviews.

01 Collect
Identity, entity, purpose, expected activity

02 Verify
Documents, registries, liveness and addresses

03 Understand
Ownership, control, directors and signatories

04 Screen
Sanctions, PEP, adverse media and internal lists

05 Assess
Country, industry, product and delivery risk

06 Decide
Approve, request EDD, restrict or decline

Minimum data model

Entity	Purpose
party	Person or legal entity; stable internal ID
ownership	UBO, director, controller and relationship
verification_check	Provider, status, evidence and expiry
screening_result	List version, score, disposition and reviewer
risk_assessment	Inputs, weights, score, band and policy version
document	Type, secure reference, hash, issuer and expiry

Explainable risk score

Illustrative weighted model

```
risk = geography * 0.25
     + industry  * 0.20
     + ownership * 0.20
     + product   * 0.15
     + channel   * 0.10
     + behaviour * 0.10
```

Weights require compliance approval and validation.

PYTHON - EXPLAINABLE ONBOARDING DECISION

```python
def onboarding_decision(profile, checks, policy):
    if checks.sanctions_confirmed:
        return Decision.block("SANCTIONS_CONFIRMED")
    if checks.identity_failed or checks.ownership_unknown:
        return Decision.review("IDENTITY_OR_OWNERSHIP")
    score = policy.customer_risk_score(profile, checks)
    if score >= policy.edd_threshold:
        return Decision.review("ENHANCED_DUE_DILIGENCE")
    return Decision.pass_("ONBOARDING_COMPLETE")
```

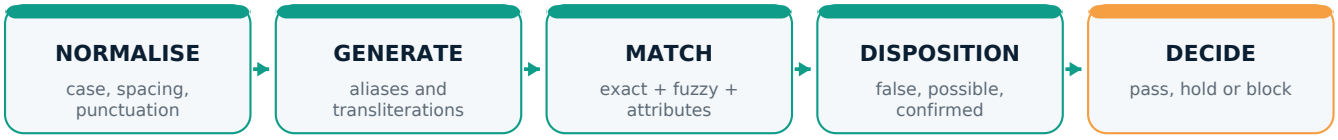
Trigger reassessment when ownership, address, directors, expected activity, device profile, corridor access or sanctions data changes. FINTRAC guidance requires reasonable measures to confirm beneficial ownership information and risk-aligned ongoing monitoring [5][6].

Screen every relevant payment party

Sanctions exposure may arise through customers, beneficiaries, banks, counterparties, intermediaries, locations and transaction narratives.

Screening target	When	Matching inputs
Customer and UBOs	Onboarding, list update and periodic review	Names, aliases, DOB, nationality, IDs, addresses
Directors and signatories	Onboarding and relationship change	Names, roles, ownership/control relationship
Beneficiary and supplier	Creation, update and every payment	Name, bank account, country, address, entity identifiers
Banks and intermediaries	Quote/route selection and before execution	BIC/SWIFT, bank name, country and routing path
Payment context	Before funding and again before payout	Purpose, invoice, IP/device, origin/destination, free text

Screening pipeline



Controls that matter

- Keep the exact source-list version and provider response used for each decision.
- Combine name similarity with date of birth, address, nationality and identifiers.
- Require analyst disposition for possible matches; never silently discard them.
- Rescreen before payout if the earlier screening result is stale or material data changed.
- Fail closed: if a mandatory provider or list is unavailable, hold rather than release.
- Apply corridor and partner eligibility after screening; a clean name is not sufficient.

Payment evaluation API

FASTAPI - ATOMIC DECISION GATE

```
@router.post("/payments/{payment_id}/evaluate")
async def evaluate(payment_id: UUID, actor=Depends(auth)):
    ctx = await repository.lock_context(payment_id)
    result = await compliance.evaluate(ctx)
    await decisions.append(result, actor.id)
    if result.outcome in {"REVIEW", "BLOCK"}:
        await payments.place_hold(ctx.payment.id, result.id)
    return result.public_view()
```

NON-NEGOTIABLE

The payout adapter must accept only an unexpired PASS decision bound to the same payment version, parties, amount, currency, corridor and route. Any material change invalidates the decision and forces reevaluation.

OFAC describes screening as a common internal control and expects an alert evaluation leading to block, reject or process decisions [7][8].

Real-time transaction monitoring

Monitor behavioural patterns across time and across connected parties. A single payment may look normal while the network around it is not.

EVENT-DRIVEN MONITORING

CUSTOMER.UPDATED · BENEFICIARY.ADDED · QUOTE.ACCEPTED · WALLET.FUNDED · PAYMENT.SUBMITTED

STREAM -> FEATURE STORE -> RULES -> ALERT / PASS

Rule family	Example signal	Typical action
Velocity	Value or count exceeds customer baseline in a rolling window.	Review; request context
Structuring	Repeated payments cluster below a reporting or approval boundary.	Aggregate; escalate
Relationship	Many unrelated senders pay one beneficiary or one device controls many accounts.	Network review
Behaviour change	Dormant account, new device, new corridor and high value occur together.	Step-up authentication; hold
Purpose mismatch	Invoice, customer industry and payment narrative are inconsistent.	Request invoice/source of funds
Route anomaly	Unusual partner, bank, geography or rapid route switching.	Route restriction; review

Policy-as-code

YAML - VERSIONED RULE

```yaml
id: TM-VELOCITY-001
version: 4
scope: CA_B2B_OUTBOUND
window: 24h
when:
  payment_count: ">= 8"
  total_value_ratio: ">= 2.5x_expected"
action: REVIEW
reason: ACTIVITY_ABOVE_PROFILE
owner: Compliance
```

Calibrate, do not merely accumulate

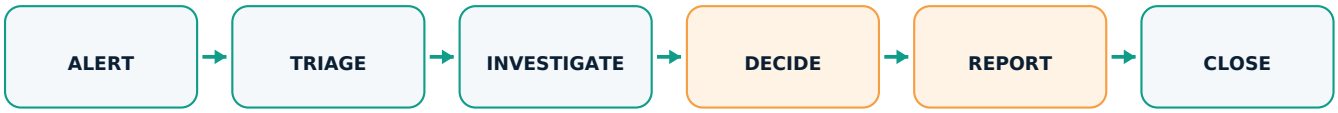
- Replay proposed rules against historical data before activation.
- Measure precision, alert volume, analyst time and missed known scenarios.
- Use effective-from dates and controlled rollout by corridor or tenant.
- Keep rule changes subject to maker-checker approval and deployment evidence.
- Never use reporting thresholds as automatic suspicion boundaries.
- Link related alerts into one case to avoid fragmented investigation.

RISK-BASED DOES NOT MEAN RISK-BLIND

Lower-risk activity can use proportionate controls. Higher-risk customers and payments require stronger evidence, closer monitoring and authorised review. The rationale, data and control applied must remain reconstructable [1][2].

Cases, reporting and immutable audit

Automation should assemble evidence and enforce deadlines. Authorised analysts remain accountable for investigation and regulatory decisions.



Case record

- Alert facts, linked parties, payments and risk signals.
- Chronology of customer activity and previous alerts.
- Evidence requests, uploaded documents and verification results.
- Analyst notes separated from immutable source evidence.
- Decision, rationale, approver and applicable policy version.
- Disclosure restrictions and role-based access to sensitive cases.

Regulatory reporting workflow

- Determine applicable report type and jurisdiction.
- Populate a validated draft from authoritative transaction data.
- Require authorised review; prevent incomplete submission.
- Submit through an approved secure channel and retain receipt.
- Track corrections, supplemental filings and deadline status.
- Do not disclose suspicious-reporting activity to the customer.

Append-only compliance decision

POSTGRESQL - DECISION EVIDENCE AND TAMPER SIGNAL

```
CREATE TABLE compliance_decision (
  id UUID PRIMARY KEY,
  payment_id UUID NOT NULL,
  payment_version INT NOT NULL,
  outcome TEXT CHECK (outcome IN ('PASS','REVIEW','BLOCK')),
  policy_version TEXT NOT NULL,
  reasons JSONB NOT NULL,
  input_hash TEXT NOT NULL,
  provider_refs JSONB NOT NULL,
  decided_at TIMESTAMPTZ NOT NULL,
  decided_by UUID,
  previous_hash TEXT,
  record_hash TEXT NOT NULL
);
-- No UPDATE or DELETE grant for the application role.
```

Evidence question	System must answer
What was checked?	Exact customer, parties, payment version, route, provider data and lists.
Which rule applied?	Policy ID, version, effective date, matched condition and outcome.
Who acted?	Service identity or user, role, authentication context, timestamp and reason.
Was it changed?	Append-only corrections, superseding decisions and hash-chain verification.
Was it reported?	Report type, approver, secure-submission receipt, deadline and amendments.

FINTRAC notes that suspicious transaction reporting has no monetary threshold; the decision depends on reasonable grounds to suspect [9].

Security, testing and responsible AI

Compliance data is highly sensitive. The control environment must protect it while proving that automated decisions remain effective.

Security and privacy controls

- Encrypt data in transit and at rest; isolate document storage.
- Apply least privilege and field-level redaction for sensitive cases.
- Use MFA and short-lived service credentials; rotate secrets.
- Separate production access from analyst and engineering duties.
- Tokenise bank and identity data wherever practical.
- Define retention by record category and applicable jurisdiction.
- Log access to compliance cases and bulk exports.
- Assess vendors, data locations, uptime and breach obligations.

Testing and operational assurance

- Unit tests for every rule, threshold and boundary condition.
- Contract tests for providers and corrupted/partial responses.
- Scenario tests for pass, review, block and provider outage paths.
- Replay/backtesting against historical events before rule release.
- Independent sampling of decisions and analyst dispositions.
- Resilience tests proving mandatory checks fail closed.
- Reconciliation between payment states and compliance decisions.
- Effectiveness review with tracked remediation and ownership.

Responsible AI boundary

Appropriate assistance	Human-controlled decisions
Document extraction and entity-link suggestions	Customer rejection or account termination
Alert prioritisation and case summarisation	Confirmed sanctions-match disposition
Pattern discovery and investigator search	Suspicious transaction report filing
Draft narrative from cited evidence	Override of mandatory policy or legal restriction

Operational dashboard

Coverage
% payments evaluated before execution

Latency
p50 / p95 decision time

Quality
confirmed matches and sampled misses

Efficiency
alerts per 1,000 payments; analyst hours

Timeliness
open/overdue cases and report deadlines

Reliability
provider uptime and fail-closed events

PIPEDA safeguards include technological and organisational controls appropriate to the sensitivity of personal information [10].

Implementation roadmap and launch gate

Start with enforceable controls and complete evidence. Add sophistication only after the core workflow is measurable, tested and owned.

1

PHASE 1 — **Weeks 1-3**

Obligation register, risk model, policy ownership, state machine and decision schema.

2

PHASE 2 — **Weeks 4-7**

KYC/KYB workflow, ownership, screening adapters, customer risk and manual cases.

3

PHASE 3 — **Weeks 8-11**

Payment gate, transaction events, monitoring rules, alert linkage and reporting drafts.

4

PHASE 4 — **Weeks 12-14**

Backtesting, resilience, security review, analyst training, pilot and launch evidence.

Production launch gate

- Compliance has approved every production rule and decision path.
- No payment can bypass or reuse a stale compliance decision.
- Mandatory provider outage scenarios demonstrably fail closed.
- Case access, maker-checker approval and report deadlines are tested.
- Data retention, encryption, audit and recovery controls are verified.
- Operational owners, escalation contacts, dashboards and runbooks are live.

Primary references

[1] FATF Recommendations - fatf-gafi.org/en/publications/Fatfrecommendations/Fatf-recommendations.html
[2] FATF Risk-Based Approach - fatf-gafi.org/en/topics/fatf-recommendations.html
[3] FINTRAC Money Services Businesses - fintrac-canafe.canada.ca/msb-esm/msb-eng
[4] FINTRAC Compliance Program Requirements - fintrac-canafe.canada.ca/guidance-directives/compliance-conformite/guide4/4-eng
[5] FINTRAC Beneficial Ownership - fintrac-canafe.canada.ca/guidance-directives/client-clientele/bor-eng
[6] FINTRAC Ongoing Monitoring - fintrac-canafe.canada.ca/guidance-directives/client-clientele/omr-eng
[7] OFAC Compliance Framework - ofac.treasury.gov/media/16331/download?inline=
[8] OFAC Introduction (June 2026) - ofac.treasury.gov/media/935656/download?inline=
[9] FINTRAC Suspicious Transactions - fintrac-canafe.canada.ca/guidance-directives/transaction-operation/str-dod/str-dod-eng
[10] PIPEDA Fair Information Principle 7 - Safeguards - priv.gc.ca (page: p_safeguards)