

PAYMENTS SIGNAL REFERENCE ARCHITECTURE

SYNTHETIC / TRAINING ONLY

ISO 20022 validation, enrichment, transformation, and canonical-data architecture

Separates secure parsing, base schema, usage-guideline rules, semantic transformation, lifecycle state, and downstream status so one green check cannot falsely imply scheme compliance.

Version: Payments Signal reference architecture v1

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REFERENCE POSTURE

The blueprint separates logical responsibilities so validation claims remain precise. A bank may use one product for several layers, different XML technologies, or no enterprise canonical model. The current implementation profile and its business rules remain authoritative.

COMPONENTS

01 Channel or upstream producer [channel]

Owner: Channel or source-system team

Creates a payment intent in an API, file, legacy message, or internal contract.

02 Envelope and transport verifier [gateway]

Owner: Messaging platform

Checks the transport, Business Application Header, sender, receiver, and duplicate evidence before business processing.

03 Secure XML parser [service]

Owner: Messaging platform

Turns the document into a controlled data structure without resolving external content.

04 Base XSD validator [control]

Owner: Messaging platform and standards team

Checks whether the XML shape and base data types satisfy the selected message schema.

05 Usage-guideline and business-rule validator [control]

Owner: Payment product and standards governance

Applies the implementation community's restrictions and rules that a base XSD cannot prove.

06 Canonical payment model and provenance [application]

Owner: Payment hub and data architecture

Holds the bank's internal payment meaning and records where every material value came from.

07 Payment orchestration and state [application]

Owner: Payments technology and operations

Makes business decisions using a validated, provenance-aware instruction.

08 Network adapter or downstream consumer [external-network]

Owner: External payment infrastructure or internal consuming system

Receives a profile-correct outbound document or returns a status, exception, or report.

INTERFACES

01 Inbound document

iso-producer -> iso-envelope | message | asynchronous

02 Authenticated XML

iso-envelope -> iso-parser | message | synchronous

03 Parsed document

iso-parser -> iso-schema | control | synchronous

04 Base-valid document

iso-schema -> iso-profile | control | synchronous

05 Profile-valid semantics

iso-profile -> iso-canonical | message | synchronous

06 Canonical payment command

iso-canonical -> iso-orchestrator | event | asynchronous

07 Profiled outbound message

iso-orchestrator -> iso-consumer | message | asynchronous

08 Status, exception, or report

iso-consumer -> iso-orchestrator | message | asynchronous

TRACES AND STRESS CASES

TRACE: pacs.008 from intake to correlated status

1. Intent becomes a message - Created
2. Peer and envelope are trusted - Transport accepted
3. XML is safely parsed - Well-formed
4. Base schema passes - Base valid
5. Usage guideline passes - Profile valid
6. Meaning is mapped with lineage - Normalised
7. Lifecycle processing starts - Accepted for processing
8. Consumer receives the message - Submitted

STRESS: Base-valid, profile-invalid

Settlement: No clearing or settlement instruction has been released.

Funds: Customer funds remain in the pre-release position defined by the channel.

Owner: Standards support or payment repair

Safe action: Return the exact profile rule and repair only from an authorised source value; never bypass the profile.

STRESS: Transformation would lose meaning

Settlement: Nothing has been submitted for settlement.

Funds: No downstream financial posting should be released.

Owner: Payment product, data architecture, and operations

Safe action: Stop the mapping, disclose the loss, and obtain an approved mapping or controlled repair decision.

STRESS: Timeout after network submission

Settlement: Unknown until network and settlement evidence are checked.

Funds: Internal reservation or posting remains unchanged until the outcome is reconciled.

Owner: Payment operations and network support

Safe action: Use technical acknowledgement, network enquiry, and business identifiers before any resend.