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(57) Abstract :
A distributed diagnostic specimen traceability system maintains a persistent Digital Specimen Passport for a physical specimen across collection, transport, laboratory receipt, referral and testing-status events. A machine-readable identifier on a specimen container is scanned at checkpoint terminals. A platform server records events in an append-only journey ledger and operates a Safety Gate that validates specimen identity, expected custody, destination and required information before accepting a state transition. A referral continuity engine retains the same passport when the specimen moves between laboratories, while an interoperability gateway maps different local LIS/LIMS accession identifiers to the passport. A transport interface associates location or timing information with the specimen and supports ETA/TAT exceptions. Role-based access and organisation-level isolation restrict information visibility. The coordinated physical scanning, state validation and identifier mapping provide cross-organisation specimen identity continuity without requiring replacement of existing laboratory information systems.

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