# Software Requirements Specification (SRS) Template

**Project: Insurance workflow automation software (IWAS)**  
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## Approvals

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| Role | Name | Signature / Email | Date |
| Course Coordinator |  |  |  |

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## 1. Introduction

1.1 Purpose

This document is a Software Requirements Specification (SRS) for an Insurance workflow automation system. It defines functional and non-functional requirements, interfaces, and verification criteria intended for instructors and students to use as a reference.

1.2 Scope  
Automates end‑to‑end insurance business processes across new business intake, underwriting, policy administration, billing, claims, endorsements, renewals, and compliance. Core capabilities include:

* + - Workflow orchestration & task management
    - Rules engine for straight‑through processing (STP)
    - Document & e‑signature handling
    - Integrations with rating, payment gateways, CRM, DMS
    - Notifications (email/SMS/push) & SLA tracking
    - Reporting, dashboards, and audit trails

1.3 Audience  
Developers, QA Engineers, System Integrators, Maintenance Technicians, and Assessment Evaluators.

1.4 Definitions

**List of Acronyms**

* + - **PAS: Policy Administration System**
    - **U/W**: Underwriting
    - **STP**: Straight‑Through Processing
    - **FNOL**: First Notice of Loss
    - **KYC**: Know Your Customer
    - **DMS**: Document Management System
    - **SLA**: Service Level Agreement
    - **PII/PHI**: Personally Identifiable / Protected Health Information

## 2. Overall description

2.1 Product perspective  
The IWAS is a modular web application with API‑first architecture. It sits between customer‑facing channels and core systems (PAS, billing, claims) to orchestrate and automate workflows

2.2 Major product functions (detailed)

* + - Workflow orchestration & task management
    - Rules engine for straight‑through processing (STP)
    - Document & e‑signature handling
    - Integrations with rating, payment gateways, CRM, DMS
    - Notifications (email/SMS/push) & SLA tracking
    - Reporting, dashboards, and audit trails

2.3 User roles and characteristics (expanded)  
 - **Prospect/Customer**: Submits applications, documents, e‑signs, receives notifications.

**- Agent/Broker**: Creates quotes, submits applications, manages endorsements/renewals.

**- Underwriter**: Reviews referrals, pricing, risk decisions, binds policies.

**- Claims Adjuster**: Handles FNOL, investigation, reserves, settlements.

**- Operations (Policy Admin)**: Issues policies, endorsements, cancellations, reinstatements.

**- Billing Specialist**: Manages invoices, dunning, refunds, write‑offs.

**- Compliance/QA**: Conducts audits, ensures regulatory adherence.

**- Supervisor/Manager**: Monitors SLAs, workload balancing, approves exceptions.

**- System Admin**: Manages users, roles, configuration, integrations.

2.4 Operating environment  
- Kubernetes‑backed containers; Linux nodes; managed PostgreSQL/SQL Server; object storage for documents; managed queue (e.g., SQS/Kafka).

- **Web**: Chromium‑based/Firefox browsers

2.5 Constraints  
 - Security & privacy by design; encryption at rest/in transit; role‑based access control (RBAC).

- Regulatory archiving & retention policies (jurisdiction‑specific).

- Zero‑downtime deploys for minor releases.

## 3. External interface requirements

**3.1 User Interfaces**

The system will provide role-specific interfaces accessible via web and mobile applications:

* **Customer Portal**
  + User-friendly interface for policy application, premium payment, claims submission, and status tracking.
  + Mobile app (Android/iOS) with push notifications for reminders and claim updates.
  + Simple navigation with multilingual support.
* **Agent Portal**
  + Dashboard to manage customer portfolios, track sales, and assist with claim initiation.
  + Access to performance reports and commission tracking.
* **Underwriter & Claims Manager Dashboard**
  + Workflow-driven interface with task assignments, pending approvals, and SLA tracking.
  + Document verification and fraud-checking interface.
  + Escalation and case reassignment options.
* **Admin Portal**
  + Role and permission management.
  + System configuration, API key management, and audit logs.
  + Regulatory reporting and compliance monitoring.

**3.2 Hardware Interfaces**

* **Client Devices**:
  + Desktop/Laptop (Windows, macOS, Linux).
  + Smartphones/Tablets (Android ≥ 10, iOS ≥ 13).
* **Server Infrastructure**:
  + Cloud-hosted servers (AWS/Azure/GCP).
  + Load balancers, firewalls, and backup storage.
* **Peripheral Devices (Optional)**:
  + Printers for policy/claim documents.
  + Biometric devices for customer KYC (future integration).

**3.3 Software Interfaces**

* **Third-Party Systems**:
  + **Payment Gateways** (Razorpay, PayPal, Stripe) for premium collection and claim payouts.
  + **KYC Verification APIs** for identity checks (e.g., Aadhaar, PAN, Passport).
  + **Fraud Detection Services** (external risk analysis tools).
  + **SMS/Email Gateways** (e.g., Twilio, SendGrid) for notifications.
* **Internal Systems**:
  + Customer Relationship Management (CRM) integration.
  + Document Management System for policy and claim records.
  + Data warehouse for reporting and analytics.

**3.4 Communications Interfaces**

* **Protocols**:
  + HTTPS for secure communication between clients and servers.
  + RESTful APIs (JSON/XML format) for third-party integrations.
  + WebSocket for real-time notifications (optional).
* **Authentication & Security**:
  + OAuth 2.0 / JWT tokens for API authentication.
  + SSL/TLS for encrypted data transmission.
* **Notifications**:
  + Push notifications via Firebase/APNS for mobile apps.
  + Email and SMS alerts for customers, agents, and managers.

## 4. System features (detailed)

### 4.1 Workflow Orchestration

### Description: Automates the routing of insurance tasks (applications, claims, renewals) through the correct approval path.

### Functional Requirements:

### FR-1: System shall define workflows for policy issuance, renewals, endorsements, and claims.

### FR-2: Tasks shall be automatically routed to the appropriate role (Agent → Underwriter → Approver).

### FR-3: Parallel and sequential workflow execution shall be supported.

### FR-4: Workflows shall be configurable by admins without coding (drag-and-drop designer).

### FR-5: SLA tracking shall monitor progress and send alerts for delays.

### 4.2 Policy Lifecycle Automation

### Description: Streamlines policy-related workflows from creation to expiry.

### Functional Requirements:

### FR-6: New policy applications shall trigger automated workflows: KYC check → Underwriter review → Approval → Policy generation.

### FR-7: Renewal workflows shall automatically generate reminders and update policy status upon payment.

### FR-8: Policy cancellation workflows shall be initiated with automated refund calculations.

### FR-9: Endorsements (changes to policy terms) shall be routed for approval before updates.

### 4.3 Claims Workflow Automation

### Description: Digitizes and automates the claims journey from submission to settlement.

### Functional Requirements:

### FR-10: Claims initiation workflow shall be triggered when a customer submits details online.

### FR-11: The system shall automatically validate claim eligibility and coverage.

### FR-12: Document verification workflows shall assign tasks to claims managers.

### FR-13: Fraud detection workflows shall auto-route high-risk claims for additional review.

### FR-14: Approved claims shall trigger settlement workflows integrated with payment gateways.

### FR-15: Rejected claims shall trigger automated customer communication with reasons.

### 4.4 Task Automation & Escalation

### Description: Automates task assignments, reminders, and escalations.

### Functional Requirements:

### FR-16: System shall automatically assign tasks based on workload, skill, and role.

### FR-17: SLA timers shall trigger reminders when deadlines are approaching.

### FR-18: Overdue tasks shall be escalated to higher-level staff automatically.

### FR-19: Managers shall have visibility into escalated and bottlenecked tasks.

### 4.5 Communication & Notifications

### Description: Automates customer and internal communication.

### Functional Requirements:

### FR-20: Customers shall receive automated emails/SMS/push notifications at key workflow stages (policy issued, claim received, claim approved/rejected).

### FR-21: Internal staff shall receive task assignment and escalation notifications.

### FR-22: Agents shall be notified of pending renewals or follow-ups.

### FR-23: Predefined templates shall ensure consistent communication.

### 4.6 Reporting & Compliance Automation

### Description: Provides automated reporting for performance monitoring and regulatory compliance.

### Functional Requirements:

### FR-24: The system shall auto-generate compliance reports (IRDAI, GDPR, etc.).

### FR-25: Managers shall view real-time workflow dashboards (pending tasks, SLAs, escalations).

### FR-26: Audit trails shall be automatically generated for all workflow activities.

### FR-27: Reports shall be exportable in PDF, Excel, and CSV formats.

### 4.7 Security & Data Management

### Description: Ensures secure handling of insurance workflows and sensitive data.

### Functional Requirements:

### FR-28: Role-based workflow access shall restrict tasks to authorized users.

### FR-29: All workflow data shall be encrypted at rest and in transit.

### FR-30: Multi-factor authentication (MFA) shall be enforced for workflow approvers.

### FR-31: Data retention workflows shall automatically archive or purge records after compliance deadlines.

### 4.1 Authentication

Description: Authenticate the cardholder using EMV card and PIN; support chip & contactless where applicable.

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| Req ID | Requirement | Type | Priority | Source/Stakeholder | Acceptance criteria / Test case ref | Comments / Dependencies |
| ATM-F-001 | The system shall validate card authenticity (EMV) and verify PIN via bank core. | Functional | High | Security / Banking | AC-ATM-F-001: Valid EMV card and correct PIN leads to authenticated session. Test: TC-Auth-01 | Requires EMV reader and Core API |
| ATM-F-002 | The system shall mask PIN entry and not log PIN characters. | Functional | High | PCI-DSS | AC-ATM-F-002: PIN masked on UI and absent from logs. Test: TC-Auth-02 | Audit review required |
| ATM-F-003 | The system shall lock the card after 3 consecutive failed PIN attempts and record an audit event. | Functional | High | Security | AC-ATM-F-003: After 3 failures, further attempts are blocked and message displayed. Test: TC-Auth-03 | Card must be flagged in Core |

### 4.2 Cash Withdrawal

Description: Dispense cash in validated denominations and ensure ledger consistency with bank core.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Req ID | Requirement (shall...) | Type | Priority | Source/Stakeholder | Acceptance criteria / Test case ref | Comments / Dependencies |
| ATM-F-010 | The system shall verify sufficient available balance and daily limit before dispensing cash. | Functional | High | Business | AC-ATM-F-010: Dispense occurs only if balance >= amount and within limits. Test: TC-WD-01 | Core API check required |
| ATM-F-011 | The system shall dispense requested amount using available denominations and update cash cassette counts. | Functional | High | Operations | AC-ATM-F-011: Dispensed amount equals requested; cassette counts decremented. Test: TC-WD-02 | Hardware interaction with dispenser |
|  |  |  |  |  |  |  |

### 4.3 Cash/Check Deposit

Requirements: The system shall accept deposits (envelope or bulk acceptor), validate amounts where possible, and queue offline transactions if network unavailable. IDs: ATM-F-020..ATM-F-025.

### 4.4 Funds Transfer

Requirements: Support intra-bank transfers between own accounts with confirmation and receipt. Reject transfers exceeding configured limits. IDs ATM-F-030..ATM-F-032.

### 4.5 Maintenance & Monitoring

Requirements: Provide a technician menu for diagnostics, remote monitoring API integration, secure admin authentication, and encrypted log shipping. IDs ATM-F-040..ATM-F-045.

## 5. Non-functional requirements (detailed)

NFRs below are measurable and tied to test plans. IDs ATM-NF-###.

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| --- | --- | --- | --- | --- |
| Req ID | Requirement | Category | Priority | Acceptance criteria / Measurement |
| ATM-NF-001 | Overall transaction response (from card insertion to end) shall be ≤ 5 seconds for 90% of transactions under normal load. | Performance | High | 90th percentile ≤ 5s in production-like test. Test: TC-Perf-01 |
| ATM-NF-002 | System shall provide 99.9% availability monthly; scheduled maintenance windows excluded. | Reliability | High | Uptime reports show ≥99.9% per month. Test: Ops reports. |
| ATM-NF-003 | All sensitive cardholder data must comply with PCI-DSS; PAN must not be stored in plaintext. | Security/Compliance | High | PCI-DSS audit checklist pass. Test: TC-Sec-01 |
| ATM-NF-004 | System shall provide logs with timestamped events retained for 7 years for audit purposes. | Audit/Data Retention | High | Automated archival and retrieval verified. Test: TC-OPS-01 |
| ATM-NF-005 | System shall support accessibility features (screen reader, high contrast) conforming to WCAG 2.1 AA where applicable. | Usability/Accessibility | Medium | Accessibility audit pass. Test: TC-UX-01 |

## 5.1. Security

## 5.1.1 Security Objectives

This section will list 2 to 4 security objectives for the project.

## 5.1.2 Security Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Req ID | Requirement (shall...) | Type | Priority | Acceptance criteria / Test case ref |
| PRJ-SR-001 | TLS 1.2+ mandatory for all network connections. | Security | High |  |

## 6. Quality attributes & Acceptance tests

- Exit criteria for acceptance: All high-priority functional requirements implemented and verified, no critical NFR failures, and RTM shows all test cases passed.

- Acceptance test suites: Authentication, Withdrawal, Deposit, Transfer, Performance, Security, and Accessibility tests.

## 7. System models and diagrams

## 7.1 UML Use-Case diagram

At least 2 UML use case diagrams to be created.

## 8. Requirements Traceability Matrix (RTM)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Req ID | Requirement short | Section ref / Design Spec | Module | Test case(s) | Status (N/P/A) | Comments |
| ATM-F-001 | Validate PIN | 4.1 / DS-Auth-01 | AuthModule | TC-Auth-01 | N |  |
| ATM-F-010 | Dispense cash | 4.2 / DS-Dispense-01 | DispenseModule | TC-WD-01, TC-WD-02 | N |  |
| ATM-NF-001 | Response time target | 5 / DS-Perf-01 | WebUI / CoreAPI | TC-Perf-01 | N |  |