项目文档

# Functional Requirement

Requirement ID Statement  
ASSET-LOG-001 The system shall automatically log asset check-out and return events by scanning a QR code or using the mobile app, recording the user ID, timestamp, and GPS location.  
ASSET-VIEW-001 The system shall display real-time status updates (e.g., in use, returned, overdue) for each asset, including the last recorded timestamp and GPS location.  
ASSET-ALERT-001 The system shall generate alerts (pop-up or email) when an asset is overdue, including the asset name, assigned user, and duration of overdue.  
ASSET-ALERT-002 Users shall be able to respond to overdue alerts by marking the asset as “in use” or entering a reason for the delay in return.  
ASSET-APPROVAL-001 The system shall allow administrators to define approval levels based on asset type or value (e.g., manager approval for high-value assets).  
ASSET-APPROVAL-002 The system shall provide real-time visibility into the approval status of a request and notify approvers via email or in-app alerts when a request is pending.  
ASSET-STATUS-001 Users shall be able to view the current status of their asset transfer requests, including the approval date and the name of the person who approved the request.  
ASSET-ACCESS-001 The system shall support a mobile app and web interface for logging asset events, receiving alerts, and managing approvals.  
ASSET-AUDIT-001 The system shall maintain an audit trail for all check-out, return, and approval events, including user, timestamp, and action details.

# External Description

# 5 Constraints  
  
## 5.1 Regulatory/Legal Constraints  
  
\*\*C-REG-001:\*\* The system shall comply with all applicable data protection and privacy laws, including but not limited to the General Data Protection Regulation (GDPR) and the Personal Information Protection Law (PIPL), for handling user data and asset tracking information.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure legal compliance and protect user data, especially for organizations operating in regions with strict privacy regulations.  
- \*\*Source:\*\* Stakeholder Legal Review  
- \*\*Acceptance Criteria:\*\* A legal compliance report shall be provided by an external auditor confirming adherence to GDPR and PIPL.  
  
\*\*C-REG-002:\*\* The system shall ensure that all data collected and stored is retained and deleted in accordance with the organization's data retention and deletion policies.  
  
- \*\*Priority:\*\* Should Have  
- \*\*Rationale:\*\* To align with internal governance and minimize unnecessary data storage, reducing legal and security risks.  
- \*\*Source:\*\* Stakeholder Governance Team  
- \*\*Acceptance Criteria:\*\* The system shall support configurable data retention policies with audit logs confirming deletion events.  
  
## 5.2 Hardware Constraints  
  
\*\*C-HW-001:\*\* The system shall be compatible with mobile devices that have a minimum of 2GB RAM and a camera capable of scanning QR codes.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure that all users can access the system on a variety of mobile devices.  
- \*\*Source:\*\* SRL-2.1.1  
- \*\*Acceptance Criteria:\*\* The system shall be tested on a sample of mobile devices with 2GB RAM and standard QR scanning capability, and shall function without degradation.  
  
\*\*C-HW-002:\*\* The system shall be accessible from web-accessible devices (desktops, laptops) with a minimum screen resolution of 1024x768 pixels.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure usability and accessibility from standard desktop and laptop computers.  
- \*\*Source:\*\* SRL-2.1.2  
- \*\*Acceptance Criteria:\*\* The system shall be tested on a sample of web-accessible devices with 1024x768 resolution, and shall display and function as intended.  
  
\*\*C-HW-003:\*\* The system shall be hosted on server infrastructure that supports real-time processing and can handle at least 100 concurrent users.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To maintain system performance and availability during peak usage periods.  
- \*\*Source:\*\* SRL-2.1.3  
- \*\*Acceptance Criteria:\*\* The system shall be tested under a simulated load of 100 concurrent users and shall maintain real-time performance without degradation.  
  
## 5.3 Interface Constraints  
  
\*\*C-INT-001:\*\* The system shall integrate with GPS tracking services for location-based status updates.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To provide accurate and real-time location data for assets.  
- \*\*Source:\*\* SRL-2.2.1  
- \*\*Acceptance Criteria:\*\* The system shall be able to retrieve and update GPS location data from an external GPS service within 5 seconds of the event.  
  
\*\*C-INT-002:\*\* The system shall integrate with email notification services to deliver overdue alerts and approval notifications.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure users receive timely notifications regardless of their platform or location.  
- \*\*Source:\*\* SRL-2.2.2  
- \*\*Acceptance Criteria:\*\* The system shall be able to send and receive email notifications via a configured SMTP or third-party email API.  
  
\*\*C-INT-003:\*\* The system shall utilize a QR code scanning library or SDK compatible with both mobile and web platforms.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure seamless and accurate scanning of asset identifiers across all platforms.  
- \*\*Source:\*\* SRL-2.2.3  
- \*\*Acceptance Criteria:\*\* The system shall support QR code scanning on at least one mobile and one web platform, with 100% accuracy in scanning and data input.  
  
## 5.4 Design and Implementation Constraints  
  
\*\*C-DESIGN-001:\*\* The system shall not be dependent on any proprietary software or hardware components that could limit its deployment or maintenance.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure the system remains flexible and maintainable over time.  
- \*\*Source:\*\* Stakeholder Technical Review  
- \*\*Acceptance Criteria:\*\* The system shall be implemented using open standards and shall not require any proprietary software or hardware beyond standard server and mobile device requirements.  
  
\*\*C-DESIGN-002:\*\* The system shall maintain an audit trail for all asset actions and shall store it in a tamper-proof format.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure accountability and traceability of all asset-related activities.  
- \*\*Source:\*\* SRL-2.2.4  
- \*\*Acceptance Criteria:\*\* The system shall include an audit trail feature that logs all actions and stores them in a tamper-proof format, verified by a cryptographic hash or digital signature.  
  
\*\*C-DESIGN-003:\*\* The system shall be compliant with ISO 27001 standards for information security.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure robust information security and risk management practices are followed.  
- \*\*Source:\*\* SRL-2.2.5  
- \*\*Acceptance Criteria:\*\* The system shall pass an ISO 27001 compliance audit, confirming adherence to the standard.  
  
\*\*C-DESIGN-004:\*\* The system shall enforce role-based access control (RBAC) to manage permissions.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure that only authorized users can perform specific actions, such as approving asset transfers or modifying system settings.  
- \*\*Source:\*\* SRL-2.2.4  
- \*\*Acceptance Criteria:\*\* The system shall be tested for RBAC functionality, ensuring that unauthorized users cannot perform actions outside their assigned roles.  
  
## 5.5 Other Constraints  
  
\*\*C-OTHER-001:\*\* The system shall require a stable internet connection for real-time updates and GPS data transmission.  
  
- \*\*Priority:\*\* Must Have  
- \*\*Rationale:\*\* To ensure that real-time features such as status updates and notifications function correctly.  
- \*\*Source:\*\* SRL-2.2.5  
- \*\*Acceptance Criteria:\*\* The system shall be tested under a stable internet connection, and real-time features shall function as expected with no data loss or delay beyond 5 seconds.