# Software Requirements Specification

For a notification system using email, Version 1.0

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## 1. Purpose

The primary goal of the Email Notification System (ENS) is to provide automated, timely, and relevant notifications to patients and staff regarding appointments, prescriptions, and other critical healthcare-related events. The ENS aims to improve patient engagement, reduce no-show rates, enhance communication efficiency, and streamline administrative processes. The business value lies in improved patient outcomes, reduced operational costs, and enhanced overall patient satisfaction.

## 2. Scope

* **Included Features:** The ENS will handle appointment reminders, prescription refill reminders, online consultation notifications, account updates, and administrative alerts. It will integrate with the existing Hospital Information System (HIS), Electronic Medical Record (EMR), and Practice Management System (PMS) to retrieve relevant data.
* **System Boundaries:** The ENS is limited to sending email notifications. SMS and in-app notifications are explicitly excluded. The system will not handle email marketing campaigns or unsolicited communications.
* **Excluded Features:** SMS notifications, in-app notifications, email marketing, direct integration with external calendar applications (e.g., Google Calendar, Outlook Calendar).

## 3. Stakeholders

* **Patients:** Receive appointment reminders, prescription refill reminders, and consultation notifications. Responsible for maintaining accurate contact information.
* **Doctors:** Receive notifications regarding appointment bookings, cancellations, and consultation requests. Responsible for managing their schedules and prescription information.
* **Nurses:** Receive notifications related to patient care coordination and administrative tasks. Responsible for patient follow-up and communication.
* **Administrators:** Oversee the ENS configuration, monitor performance, and manage user accounts. Responsible for ensuring system compliance and security.
* **IT Staff:** Responsible for maintaining the ENS infrastructure, troubleshooting issues, and implementing updates. Responsible for system security and data integrity.

## 4. Features

* **Automated Email Notifications:** Sends pre-defined email notifications based on triggers within the HIS/EMR/PMS.
* **Customizable Templates:** Allows administrators to customize email templates with branding and relevant information.
* **User Preference Management:** Enables patients to manage their notification preferences (e.g., frequency, types of notifications).
* **Delivery Status Tracking:** Provides administrators with reports on email delivery status (e.g., sent, delivered, bounced).
* **Integration with HIS/EMR/PMS:** Seamlessly integrates with existing systems to retrieve and update patient and appointment data.

## 5. Functional Requirements

* [FR-1]: The system shall send appointment reminders to patients 24 hours before their scheduled appointment. [High] (Source: F10)
* [FR-2]: The system shall send prescription refill reminders to patients 7 days before their prescription expires. [Medium] (Source: F10)
* [FR-3]: The system shall notify doctors of new appointment bookings. [High] (Source: F2)
* [FR-4]: The system shall notify doctors when a patient cancels an appointment. [High] (Source: F2)
* [FR-5]: The system shall notify patients when a doctor schedules an online consultation. [High] (Source: F4)
* [FR-6]: The system shall allow administrators to customize email templates. [Medium] (Source: F5)
* [FR-7]: The system shall allow patients to opt-out of specific email notifications. [Medium] (Source: F7)
* [FR-8]: The system shall track the delivery status of each email notification. [Medium] (Source: F5)
* [FR-9]: The system shall integrate with the HIS, EMR, and PMS to retrieve patient and appointment data. [High] (Source: HIS, EMR, and PACS)
* [FR-10]: The system shall send a confirmation email to patients upon successful appointment booking. [High] (Source: F1)

## 6. Non-Functional Requirements

* [NFR-1]: The system shall send email notifications within 5 minutes of the triggering event. [High]
* [NFR-2]: The system shall have an email delivery success rate of 99%. [High]
* [NFR-3]: The system shall be available 24/7 with a 99.9% uptime. [High]
* [NFR-4]: The system shall be scalable to handle a 10% increase in patient volume over the next 3 years. [Medium]
* [NFR-5]: The system shall support Windows, macOS, and Linux operating systems for administrative access. [Medium]
* [NFR-6]: The system shall provide user manuals and API documentation. [Medium]
* [NFR-7]: The system shall integrate with existing HIS, EMR, and PACS systems. [High]

## 7. Security Requirements

* [SR-1]: The system shall encrypt patient data at rest and in transit using 256-bit AES encryption. [High]
* [SR-2]: The system shall comply with HIPAA, GDPR, and CCPA regulations. [High]
* [SR-3]: The system shall implement access controls to restrict access to patient data based on user roles. [High]
* [SR-4]: The system shall maintain an audit trail of all system activities. [Medium]
* [SR-5]: The system shall protect against unauthorized access and data breaches. [High]

## 8. Constraints

* **Technical Limitations:** The system is limited by the capabilities of the existing HIS/EMR/PMS systems.
* **Business Rules:** Patients can only cancel or reschedule appointments online up to 24 hours before the scheduled time. (Source: F11)
* **Regulatory Requirements:** The system must comply with all applicable healthcare regulations, including HIPAA, GDPR, and CCPA. (Source: HIPAA, GDPR, and CCPA)
* **Budgetary Constraints:** The project budget is limited to [Insert Budget Amount].
* **Time Constraints:** The system must be implemented within [Insert Timeframe].

## 9. Priorities Section (MoSCoW)

* **Must Have:**
  + Automated appointment reminders
  + Secure data transmission
  + Integration with HIS/EMR/PMS
  + Compliance with HIPAA regulations
* **Should Have:**
  + Prescription refill reminders
  + Customizable email templates
  + User preference management
* **Could Have:**
  + Delivery status tracking
* **Won’t Have:**
  + SMS notifications
  + In-app notifications
  + Direct calendar integration

## 10. Additional Section

The ENS should be designed with human-centered design principles to ensure ease of use and accessibility. Future considerations include integrating with telemedicine platforms and expanding notification channels to include SMS and in-app notifications. The system should be designed to accommodate future integrations with other hospital systems.