Subsystem 2: Student Union Management System

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Task 2: Analysis and Specify Software Quality Requirements

FR-UO-1: Management of USU Membership

Introduction

This document specifies the software quality requirements for Subsystem 2 (Student Union Management System), with a focus on functional requirement FR-UO-1, the management of USU membership. It defines the measurable standards across four critical quality attributes: security and privacy protection, performance, reliability and scalability.

Security and Privacy protection

- Membership application data (union details, representative personal information, delegated IT officer accounts) should be transmitted over encrypted channels such as TLS 1.3 or higher.
- Access to membership data should be role-based, ensuring only authorised USU officers and relevant personnel can view or edit records.
- Personal identifiable information, such as names, contact details and student identifiers, must be stored securely using industry-standard encryption.
- Privacy must comply with GDPR and local data protection regulations, including support for data erasure upon membership termination.

Performance

- The system should process and confirm the creation or update of a membership within 2 seconds for 95% of requests under normal load.
- Data retrieval for membership details should occur in under 1 second for queries.
- During high-volume periods (e.g. start of the academic year), the system should maintain responsiveness with < 3 seconds of latency under 100 concurrent requests.

Reliability

- The membership management service should be available to industry-standard ‘three nines’ uptime - 99.9%
- Any update or termination request should include adit logging to reduce data loss or inconsistencies.
- In a system failure scenario, recovery of membership data should be possible with no more than 5 minutes of data loss (RPO ≤ 5 min) and service restoration within 30 minutes (RTO ≤ 30 min).

Scalability

- The system should support the onboarding of up to 100 new unions per academic year without degradation of performance.
- The system should handle simultaneous updates from at least 1000 users across different unions without failures.
- The architecture should support horizontal scaling to accommodate future growth in membership numbers or data volume