

Non-Functional Requirements

Non-Functional Requirements (NFR): {{PROJECT_NAME}}

Project: {{PROJECT_NAME}} Version: {{VERSION}} Date: {{DATE}}
Author: {{AUTHOR}} Status: Draft | In Review | Approved Reviewers: {{REVIEWERS}}

Document History

Version	Date	Author	Changes
0.1	{{DATE}}	{{AUTHOR}}	Initial draft

1. NFR Overview

Category	# Requirements	Highest Priority	Owner
Performance	{{COUNT}}	{{HIGH/MED/LOW}}	Tech Lead
Scalability	{{COUNT}}		Tech Lead / DevOps
Availability	{{COUNT}}		DevOps
Security	{{COUNT}}	Critical	Tech Lead + Security
Reliability	{{COUNT}}		Tech Lead / DevOps
Usability	{{COUNT}}		Designer
Compatibility	{{COUNT}}		Tech Lead
Maintainability	{{COUNT}}		Tech Lead
Compliance	{{COUNT}}		Tech Lead + Legal
Data	{{COUNT}}		Tech Lead

2. Performance Requirements

ID	Requirement	Metric	Target	Measurement Conditions	Measurement Method	Priority
NFR-P01	Page load time (initial)	Time to Interactive	< 3 seconds	4G connection, cold cache	Lighthouse / WebPageTest	Must Have
NFR-P02	Page load time (subsequent)	Time to Interactive	< 1.5 seconds	Warm cache	Lighthouse	Must Have
NFR-P03	API response time (standard)	p95 response time	< 500ms	Normal load ({{CONCURRENT_USERS}} users)	APM tool / k6	Must Have
NFR-P04	API response time (complex queries)	p95 response time	< 2 seconds	Normal load	APM tool	Should Have
NFR-P05	Database query time	p95 query time	< 100ms	Normal load	DB monitoring	Must Have
NFR-P06	File upload throughput	Upload speed	{{SIZE}}MB in < {{TIME}}s	Single user	Load testing	{{PRIORITY}}
NFR-P07	Search response time	p95 response time	< 1 second	Normal load	APM tool	Should Have
NFR-P08	Report generation	Completion time	< {{TIME}} seconds	Normal load	APM tool	Could Have
NFR-P09	Core Web Vitals: LCP	Largest Contentful Paint	< 2.5 seconds	Mobile, 4G	Lighthouse	Must Have
NFR-P10	Core Web Vitals: CLS	Cumulative Layout Shift	< 0.1	Any device	Lighthouse	Must Have

3. Scalability Requirements

ID	Requirement	Metric	Launch Target	12-Month Target	Measurement Method	Priority
NFR-S01	Concurrent users	Simultaneous active sessions	{{X}} users	{{X}} users	Load testing (k6/JMeter)	Must Have

ID	Requirement	Metric	Launch Target	12-Month Target	Measurement Method	Priority
NFR-S02	Peak load handling	Requests per second	{{X}} RPS	{{X}} RPS	Load testing	Must Have
NFR-S03	Data volume growth	Database size growth	{{X}}GB/year	{{X}}GB/year	Storage monitoring	Should Have
NFR-S04	API rate limits	Max requests per user/hour	{{X}} requests	{{X}} requests	API gateway metrics	Must Have
NFR-S05	File storage growth	Storage volume	{{X}}GB	{{X}}GB	Storage monitoring	Should Have
NFR-S06	Auto-scaling response	Time to scale out under load	< 2 minutes	< 2 minutes	Cloud console metrics	Should Have
NFR-S07	Geographic distribution	Regions supported	{{REGIONS}}	{{REGIONS}}	CDN configuration	{{PRIORITY}}

4. Availability Requirements

ID	Requirement	Target	Measurement Period	Exclusions	Priority
NFR-A01	System uptime SLA	$\geq \{99.5 / 99.9\}\%$	Monthly rolling	Scheduled maintenance	Must Have
NFR-A02	Scheduled maintenance window	Max {{X}} hours/month	Monthly	{{PREFERRED_WINDOW}}	Must Have
NFR-A03	Maintenance notification lead time	≥ 48 hours notice	Per event	Emergency patches: 4 hours	Must Have
NFR-A04	RPO (Recovery Point Objective)	Max {{X}} hours data loss	Per incident	N/A	Must Have
NFR-A05	RTO (Recovery Time Objective)	System restored within {{X}} hours	Per incident	N/A	Must Have
NFR-A06	Database backup frequency	Every {{X}} hours	Ongoing	N/A	Must Have
NFR-A07	Backup retention	{{X}} days rolling	Ongoing	N/A	Must Have
NFR-A08	Disaster recovery test	Pass DR drill	Annually	N/A	Should Have

SLA Calculation Reference:

Uptime %	Annual Downtime	Monthly Downtime
99.9%	8.7 hours	43.8 minutes
99.5%	43.8 hours	3.6 hours
99.0%	87.6 hours	7.3 hours

5. Security Requirements

ID	Requirement	Category	Target / Standard	Measurement Method	Priority
NFR-SEC01	Authentication method	Auth	{{JWT/OAuth2/OIDC}} + MFA optional	Code review + pentest	Must Have
NFR-SEC02	Password policy	Auth	Min 8 chars, 1 uppercase, 1 number, 1 special	Automated test	Must Have
NFR-SEC03	Session management	Auth	Timeout: 30min idle; absolute: 8 hours	Automated test	Must Have
NFR-SEC04	Data encryption in transit	Encryption	TLS 1.3 minimum	SSL Labs scan (grade A+)	Must Have
NFR-SEC05	Data encryption at rest	Encryption	AES-256 for PII; database encryption	Infrastructure review	Must Have
NFR-SEC06	Input validation	Injection Prevention	All inputs sanitized server-side; parameterized queries	Code review + SAST	Must Have
NFR-SEC07	XSS prevention	Injection Prevention	CSP headers; output encoding	OWASP ZAP / DAST	Must Have
NFR-SEC08	CSRF protection	Injection Prevention	CSRF tokens on all state-changing requests	Code review	Must Have
NFR-SEC09	Rate limiting	DDoS/Abuse	API: {{X}} req/min per IP; login: 5 attempts/15min	Load testing	Must Have

ID	Requirement	Category	Target / Standard	Measurement Method	Priority
NFR-SEC10	Audit logging	Compliance	All auth events, data mutations logged with user + timestamp	Log review	Must Have
NFR-SEC11	Dependency security	Supply Chain	No known critical CVEs in dependencies	Automated scan (Snyk/Dependabot)	Must Have
NFR-SEC12	Secret management	Secrets	No secrets in code/git; use env vars or vault	Code scan + git history check	Must Have
NFR-SEC13	Role-based access control	Authorization	Principle of least privilege; no role escalation	Code review + penetration test	Must Have
NFR-SEC14	Security headers	HTTP Security	HSTS, X-Frame-Options, X-Content-Type-Options	securityheaders.com scan	Must Have
NFR-SEC15	Vulnerability scanning	Operations	Automated scan in CI; critical issues block deploy	CI pipeline	Should Have
NFR-SEC16	Penetration testing	Operations	Annual external pentest	Third-party report	Should Have

6. Reliability Requirements

ID	Requirement	Metric	Target	Measurement Method	Priority
NFR-R01	Application error rate	5xx errors / total requests	< 0.1%	APM monitoring	Must Have
NFR-R02	Client-side error rate	JS errors per session	< 1% of sessions	Error tracking (Sentry)	Should Have
NFR-R03	MTBF (Mean Time Between Failures)	Average time between incidents	> {{X}} days	Incident tracking	Should Have
NFR-R04	MTTR (Mean Time To Recovery)	Average time to restore service	< {{X}} hours	Incident tracking	Must Have
NFR-R05	Data integrity	Zero data corruption events	0 incidents	Database integrity checks	Must Have

ID	Requirement	Metric	Target	Measurement Method	Priority
NFR-R06	Transaction integrity	Atomic transactions	ACID compliance	Database tests	Must Have
NFR-R07	Graceful degradation	Partial failure handling	Non-critical features fail gracefully; core stays up	Chaos testing	Should Have
NFR-R08	Health check endpoint	System health observable	/health returns 200 when healthy	Monitoring	Must Have

7. Usability Requirements

ID	Requirement	Target	Measurement Method	Priority
NFR-U01	Time to complete core task	New user completes {{KEY_TASK}} in < {{X}} minutes	Usability testing	Must Have
NFR-U02	Error recovery	User can recover from any error without help	Usability testing	Must Have
NFR-U03	WCAG compliance	WCAG 2.1 Level AA	Automated axe-core + manual review	Must Have
NFR-U04	Keyboard navigation	All interactive elements reachable by keyboard	Manual testing	Must Have
NFR-U05	Screen reader support	Compatible with NVDA / VoiceOver	Manual testing	Should Have
NFR-U06	Mobile responsiveness	Fully functional on 375px-1440px width	Manual + automated	Must Have
NFR-U07	Color contrast	≥ 4.5:1 for normal text; ≥ 3:1 for large text	Contrast checker	Must Have
NFR-U08	Onboarding completion	{{X}}% of new users complete onboarding	Analytics	Should Have
NFR-U09	Help / documentation	All key features documented in-app or in help center	Content audit	Should Have

8. Compatibility Requirements

ID	Requirement	Category	Target	Priority
NFR-C01	Web browsers	Browser	Chrome 100+, Firefox 100+, Safari 16+, Edge 100+	Must Have
NFR-C02	Mobile browsers	Browser	Safari iOS 15+, Chrome Android 100+	Must Have
NFR-C03	Mobile operating systems	OS	iOS 15+, Android 11+	Must Have
NFR-C04	Desktop operating systems	OS	Windows 10+, macOS 12+, Ubuntu 20.04+	Must Have
NFR-C05	Screen resolutions	Responsive	375px to 2560px width	Must Have
NFR-C06	Minimum device specs	Performance	Works on mid-range 2020+ devices	Should Have
NFR-C07	Third-party integrations	API	{{EXTERNAL_SYSTEM}} API version {{VERSION}}	Must Have
NFR-C08	Email clients	Email	Gmail, Outlook, Apple Mail, mobile clients	Should Have

9. Maintainability Requirements

ID	Requirement	Metric	Target	Measurement Method	Priority
NFR-M01	Test coverage	% of code covered by automated tests	≥ 80% overall; ≥ 95% for critical paths	CI coverage report	Must Have
NFR-M02	Code documentation	% of public APIs documented	100% of public APIs	Code review	Must Have
NFR-M03	Cyclomatic complexity	Per-function complexity	Max 10 per function; refactor if exceeded	Static analysis (SonarQube)	Should Have
NFR-M04	Dependency currency	% of dependencies on current major version	≥ 80% current; 0 dependencies with critical CVEs	Automated scan	Should Have

ID	Requirement	Metric	Target	Measurement Method	Priority
NFR-M05	Deployment frequency	Time to deploy a bug fix to production	< 1 hour from merge	CI/CD metrics	Should Have
NFR-M06	Feature flag support	Ability to disable features without deploy	Available for all major features	Code review	Could Have
NFR-M07	Logging completeness	Log coverage for operations	All external calls, errors, and user mutations logged	Log review	Must Have
NFR-M08	Monitoring observability	Dashboards for key metrics	Dashboards for error rate, response time, uptime	Monitoring tool	Must Have

10. Compliance Requirements

ID	Regulation	Applicability	Requirement	Technical Implementation	Priority
NFR-COMP01	GDPR	{{YES — if handling EU personal data}}	Lawful basis for processing; right to deletion; DPA required; breach notification within 72h	User data deletion API; audit logs; DPA in place	Must Have
NFR-COMP02	GDPR — Cookie consent	{{YES — if using tracking cookies}}	Explicit consent before non-essential cookies	Cookie consent banner; opt-in only tracking	Must Have
NFR-COMP03	GDPR — Data minimization	Yes	Collect only data necessary for stated purpose	BA review of data model	Must Have
NFR-COMP04	{{HIPAA}}	{{YES/NO — healthcare data}}	PHI protection; audit logs; BAA required	Role-based access; encrypted PHI fields	{{PRIORITY}}
NFR-COMP05	{{PCI-DSS}}	{{YES/NO — payment card data}}	SAQ compliance; tokenization; no card storage	Stripe/payment gateway tokenization	{{PRIORITY}}
NFR-COMP06	Norwegian Personvernloven	{{YES}}	Alignment with GDPR national implementation	Legal review	Must Have

ID	Regulation	Applicability	Requirement	Technical Implementation	Priority
NFR-COMP07	WCAG 2.1 AA	{{YES}}	Digital accessibility	NFR-U01 to NFR-U07	Must Have

11. Data Requirements

ID	Requirement	Category	Target	Implementation	Priority
NFR-D01	Data retention — user data	Retention	{{X}} years active; deleted within 30 days of account deletion request	Scheduled deletion job	Must Have
NFR-D02	Data retention — logs	Retention	Application logs: 90 days; Audit logs: 3 years	Log rotation policy	Must Have
NFR-D03	Database backup frequency	Backup	Full backup daily; transaction logs every {{X}} hours	Automated backup schedule	Must Have
NFR-D04	Backup encryption	Backup	Backups encrypted with AES-256	Infrastructure config	Must Have
NFR-D05	Data integrity checks	Integrity	Database constraints; no orphaned records	DB schema + integration tests	Must Have
NFR-D06	PII identification	Privacy	All PII fields identified and documented	Data dictionary	Must Have
NFR-D07	Data export	Portability	User can export their data in machine-readable format (GDPR Article 20)	Export API endpoint	Must Have
NFR-D08	Data anonymization	Privacy	Anonymize user data in non-production environments	Dev/staging data scripts	Must Have
NFR-D09	Archival strategy	Retention	Data older than {{X}} years archived to cold storage	Archive schedule	Should Have

12. NFR Testing & Verification Plan

NFR Category	Testing Method	Tools	Frequency	Pass Criteria
Performance	Load testing	k6, JMeter, Lighthouse	Pre-launch + monthly	All NFR-P targets met
Scalability	Stress testing	k6	Pre-launch	System gracefully handles 2× peak load
Security	SAST + DAST + Pentest	Snyk, OWASP ZAP, external pentest	CI (SAST), Pre-launch (DAST+Pentest), Annual	No critical/high vulnerabilities unresolved
Accessibility	Automated + manual	axe-core, manual screen reader	Per sprint	WCAG 2.1 AA
Availability	Monitoring + DR drill	Uptime monitor	Ongoing + annual	SLA targets met
Compliance	Legal review + audit	Manual + automated	Pre-launch + annual	All compliance items verified

Approval

Role	Name	Date	Signature
Author			
Reviewer			
Tech Lead			
Business Analyst			
Product Owner			
AI Director (John)			
Client Representative			

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