Software Requirements Specification

Surat-Link: Textile Labor Marketplace

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Document Control

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1.0	2026-02-10	Development Team	Initial Release

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1. INTRODUCTION

1.1 Purpose

This Software Requirements Specification (SRS) document provides a comprehensive description of the Surat-Link platform - a direct marketplace connecting textile businessmen with skilled workers in Surat's textile industry. This document is intended for:

• Development teams (frontend, backend, mobile)

• Quality assurance engineers

• Project managers and stakeholders

• System architects

• Third-party integrators

1.2 Scope

Product Name: Surat-Link (Textile Labor Marketplace)

Product Vision: Create a direct, transparent connection between textile businessmen and workers, eliminating information asymmetry and enabling instant job matching.

Core Capabilities:

• Real-time work posting by businessmen

• Location-based work discovery for workers

• One-click job acceptance ('Yes' response)

• Automatic contact detail exchange upon acceptance

• Trust-based rating system

• WhatsApp integration for notifications

Out of Scope (Version 1.0):

• Payroll management

• Attendance tracking

• Fabric procurement

• Machine maintenance

• Training programs

• Labor law compliance tracking

1.3 Document Conventions

Convention	Meaning
SHALL/MUST	Mandatory requirement
SHOULD	Recommended requirement
MAY	Optional requirement
[FR-XXX]	Functional Requirement ID
[NFR-XXX]	Non-Functional Requirement ID

2. OVERALL DESCRIPTION

2.1 Product Perspective

Market Context:

Surat processes 40% of India's textile production with 500,000+ workers. Current job finding relies on:

• Word-of-mouth and personal networks

• Phone calls to known businessmen

• Physical visits to factories

• No visibility into available opportunities

• Trust issues between businessmen and unknown workers

2.2 Product Functions (High-Level)

User Management: Dual-role authentication and profile management

Work Posting: Businessmen post job requirements with detailed specifications

Work Discovery: Workers find relevant opportunities based on location and skills

Direct Connection: One-click 'Yes' response triggers automatic contact exchange

Trust & Reputation: Bidirectional rating system after job completion

Communication: In-app messaging + WhatsApp notifications

Analytics Dashboard: Job posting insights for businessmen

2.3 User Classes and Characteristics

2.3.1 Businessman (Manufacturer/Factory Owner)

Technical Proficiency: Low-Medium (comfortable with web forms)

Access: Web dashboard via desktop/tablet

Frequency: Daily during production planning

Primary Goals:

• Fill urgent worker requirements quickly

• Find reliable, skilled workers

• Reduce machine idle time

• Build a network of trusted workers

2.3.2 Worker

Technical Proficiency: Low (primarily mobile users, WhatsApp-native)

Access: Mobile app (Android/iOS)

Frequency: Multiple times daily (job hunting)

Primary Goals:

• Find consistent work opportunities

• Discover better-paying jobs

• Work in nearby locations (reduce commute)

• Build reputation for stable employment

3. SYSTEM FEATURES AND REQUIREMENTS

3.1 User Management

3.1.1 Businessman Registration [FR-001]

Description: Businessmen SHALL register via web portal with business verification.

Functional Requirements:

[FR-001-1] System SHALL provide registration form with fields: Full Name, Business Name, GST Number (optional), Email, Mobile Number, Factory Address, Cluster Location, Business Type

[FR-001-2] System SHALL send OTP to mobile number for verification

[FR-001-3] System SHOULD verify GST number via Government API if provided

[FR-001-4] System SHALL create businessman profile upon successful verification

[FR-001-5] System SHALL auto-reject suspicious registrations (duplicate GST, flagged phone numbers)

Priority: HIGH

3.1.2 Worker Registration [FR-002]

Description: Workers SHALL register via mobile app with skill profile.

Functional Requirements:

[FR-002-1] System SHALL allow mobile OTP-based registration

[FR-002-2] System SHALL collect: Full Name, Mobile Number, WhatsApp Number, Current Location, Skills, Experience Level, Languages Known

[FR-002-3] System SHALL allow profile photo upload (optional)

[FR-002-4] System SHALL create worker profile immediately (low-friction onboarding)

[FR-002-5] System MAY verify worker via businessman referral in future

Priority: HIGH

3.2 Work Posting (Businessman)

3.2.1 Create Work Post [FR-003]

Description: Businessmen SHALL post work requirements with detailed specifications.

Work Post Fields:

Field	Type	Validation	Example
Work Title	Text	Max 100 chars	Water-Jet Operators Needed
Machine Type	Dropdown	Required	Rapier/Water-Jet/Air-Jet
Fabric Type	Dropdown	Required	Saree/Dress Material/Suiting
Number of Workers	Integer	1-50	3
Rate per Meter	Currency	INR, min ■0.50	■3.50
Shift Timing	Radio	Day/Night/Both	Day (8 AM - 6 PM)
Work Duration	Date Range	Min 1 day	2026-02-15 to 2026-03-15
Experience Required	Dropdown	0-1/1-3/3-5/5+ years	1-3 years

Additional Requirements:

[FR-003-2] System SHALL calculate estimated daily earning

[FR-003-3] System SHALL allow attaching fabric sample image (max 5MB)

[FR-003-4] System SHALL auto-expire posts after 7 days if no workers respond

[FR-003-5] System SHALL allow editing posts until first worker responds

Priority: HIGH

Business Rule [BR-001]: Rate must align with market standards (■1.50 - ■10.00/meter)

3.3 Work Discovery (Worker)

3.3.1 Browse Work Opportunities [FR-005]

Description: Workers SHALL discover work posts via location and skill-based feed.

Post Ranking Algorithm:

1. Posts matching worker's exact skills (within 5 km)

2. Posts in worker's preferred clusters

3. Recent posts (posted < 24 hours)

4. Highest paying posts

5. Posts from highly-rated businessmen

Filter Options:

• Machine Type (matching worker's skills)

• Distance (2 km / 5 km / 10 km / 15 km)

• Rate Range (slider: ■1 - ■10/meter)

• Shift Preference (Day/Night/Flexible)

• Experience Level

• Work Duration (1-7 days / 1-4 weeks / 1+ months)

Work Card Display Elements:

• Business Name with Rating (★ 4.2/5.0)

• Machine Type + Fabric Type

• Rate per Meter (prominently displayed)

• Number of Workers Needed

• Distance from Worker (e.g., '2.3 km away')

• Work Duration

• Time Posted (e.g., '2 hours ago')

• Prominent [YES] button

Priority: HIGH

3.4 Work Acceptance Flow

3.4.1 Worker Response [FR-007]

Description: Workers SHALL respond to work posts with one-click 'Yes' action.

Response Flow:

Step 1: Worker clicks 'YES' button

Step 2: System shows confirmation dialog with contact preview

Step 3: Worker confirms interest

Step 4: System creates response record

Step 5: System shares contact details bidirectionally

Step 6: System sends simultaneous notifications to both parties

Step 7: Both users receive contact information

Contact Details Shared:

To Businessman	To Worker
Worker Full Name	Business Name
Mobile Number	Businessman Name
WhatsApp Number	Mobile Number
Skills and Experience	WhatsApp Number
Overall Rating	Factory Address with Map
Profile Photo	Overall Rating

Priority: HIGH

Business Rule [BR-002]: Contact exchange is permanent and cannot be revoked once shared

4. EXTERNAL INTERFACE REQUIREMENTS

4.1 User Interfaces

4.1.1 Web Application (Businessman)

Dashboard Layout:

• Top Navigation: Logo, Post Work, My Posts, Workers, Profile

• Main Content: Work post cards in grid (3 columns desktop, 2 tablet, 1 mobile)

• Sidebar: Notifications, Quick Stats, Recent Responses

Accessibility:

• WCAG 2.1 Level AA compliance

• Keyboard navigation support

• Screen reader compatible (ARIA labels)

• High contrast mode

4.1.2 Mobile Application (Worker)

Bottom Navigation:

• Work (home feed)

• My Responses

• Messages

• Profile

Offline Mode:

• Cache last 100 viewed posts

• Show 'Offline - Showing Cached Posts' banner

• Queue 'Yes' responses for sending when online

• Auto-sync when connection restored

4.3 Software Interfaces

Interface	Purpose	Integration Method
SMS Gateway (Twilio/MSG91)	OTP delivery for authentication	REST API
GST Verification API	Verify businessman GST numbers	Government API
Google Maps API	Geocoding, distance calculation, embedded maps	JavaScript SDK
WhatsApp Business API	Notifications and alerts (Phase 2)	REST API
Payment Gateway (Razorpay)	Payment processing (Phase 3)	REST API

5. NON-FUNCTIONAL REQUIREMENTS

5.1 Performance Requirements

[NFR-001] Response Time: API response < 500ms (90th percentile), Work feed load < 1 second, 'Yes' response submission < 2 seconds

[NFR-002] Throughput: Support 1,000 concurrent users (Phase 1), Scale to 10,000 (Phase 2), Handle 50,000 work posts/month, Process 200,000 'Yes' responses/month

[NFR-003] Database Queries: Work listing query < 200ms, Worker search < 300ms, Rating calculation < 100ms

5.2 Safety Requirements

[NFR-004] Data Backup: Automated backups every 6 hours, 90-day retention, Point-in-time recovery (within 5 minutes)

[NFR-005] Failover: Database replication (primary + 2 replicas), Auto-failover if primary fails (< 30 seconds)

[NFR-006] Error Handling: Graceful degradation, User-friendly error messages, Auto-retry for transient failures

5.3 Security Requirements

[NFR-007] Authentication: JWT-based session management, Token expiry: 7 days (web), 30 days (mobile), OTP expiry: 10 minutes

[NFR-008] Authorization: Role-based access control (Businessman vs Worker), Workers cannot create posts, Businessmen cannot respond to posts

[NFR-009] Data Encryption: In-transit: TLS 1.3, At-rest: AES-256 for PII

[NFR-010] Privacy: Contact details only shared after 'Yes' response, Phone numbers masked in public views

[NFR-011] Rate Limiting: Max 100 API requests/minute per user, Max 5 OTP requests/hour per phone, Max 50 'Yes' responses per day per worker

5.4 Software Quality Attributes

5.4.1 Reliability

[NFR-013] Uptime: 99.5% uptime (monthly), Max 4 hours downtime/month

[NFR-014] MTBF: Server crashes < 1 per month, App crashes < 0.1% of sessions

[NFR-015] MTTR: Critical bugs < 2 hours, High priority < 24 hours, Medium priority < 1 week

5.4.3 Maintainability

[NFR-018] Code Quality: Unit test coverage $\geq$ 70%, Integration test coverage $\geq$ 50%, ESLint/Prettier for formatting

[NFR-019] Documentation: API documentation (Swagger), Inline code comments, README files, Deployment runbook

5.4.4 Scalability

[NFR-021] Horizontal Scaling: Stateless API design, Load balancer (NGINX/AWS ALB), Auto-scaling groups

[NFR-022] Database Scaling: MongoDB sharding for > 1M posts, Read replicas for analytics

5.4.5 Usability

[NFR-023] Onboarding: Businessman completes first post < 5 minutes, Worker completes registration < 2 minutes

[NFR-024] Localization: Support Gujarati (primary), Hindi, English. Date format: DD/MM/YYYY, Currency: ■ (INR)

[NFR-025] Help & Support: In-app FAQ, WhatsApp support, Response time < 24 hours

6. SYSTEM ARCHITECTURE

6.1 Architectural Overview

Architecture Style: Monolithic (Phase 1) → Microservices (Phase 3)

Rationale: Monolithic for faster MVP development, simpler deployment and debugging. Migrate to microservices at 10,000+ active users.

6.3 Technology Stack

Layer	Technology	Justification
Frontend (Web)	React 18 + Vite	Fast dev experience, modern hooks
Frontend (Mobile)	React Native + Expo	Code reuse, rapid prototyping
Backend	Node.js 18 + Express	JavaScript full-stack, large ecosystem
Database	MongoDB 6.0	Flexible schema, handles denormalization
Caching	Redis 7.0	Fast session storage, post feed caching
File Storage	AWS S3 / Cloudinary	Scalable image hosting
Real-time	Socket.io	WebSocket for live updates
Authentication	JWT + bcrypt	Industry standard, stateless
Maps	Google Maps API	Accurate geocoding
Push Notifications	Firebase Cloud Messaging	Cross-platform, reliable
Testing	Jest + React Testing Library	Unit + integration tests
Deployment	Docker + AWS ECS/Fargate	Containerized, auto-scaling
Monitoring	Sentry + Datadog	Production observability

6.4 API Design Standards

Base URL: https://api.suratlink.com/v1

Method	Endpoint	Description	Auth
POST	/auth/register	User registration	No
POST	/auth/login	User login (OTP)	No
POST	/auth/verify-otp	Verify OTP and get token	No
GET	/profile	Get own profile	Yes
PUT	/profile	Update profile	Yes
POST	/work-posts	Create work post	Yes (B)
GET	/work-posts	List work posts (with filters)	Yes
GET	/work-posts/:id	Get work post details	Yes
POST	/work-posts/:id/respond	Worker says 'Yes'	Yes (W)
GET	/work-posts/:id/responses	Get interested workers	Yes (B)
POST	/ratings	Submit rating	Yes
GET	/ratings/:user_id	Get user's ratings	Yes

Note: (B) = Businessman only, (W) = Worker only

7. DATA REQUIREMENTS

7.1 Logical Data Model

7.1.1 Users Collection

Key Fields:

• _id: ObjectId

• role: 'businessman' | 'worker'

• phone: String (unique)

• email: String (optional)

• name: String

• business_name: String (for businessmen)

• gst_number: String (optional)

• skills: Array (for workers)

• location: Object {address, cluster, coordinates}

• rating: Object {overall, count, breakdown}

• verification: Object {gst_verified, badges}

• created_at, updated_at: ISODate

7.1.2 Work Posts Collection

Key Fields:

• _id: ObjectId

• businessman_id: ObjectId (reference to users)

• title: String

• machine_type: String

• fabric_type: String

• worker_count: Integer

• rate_per_meter: Decimal

• shift: String

• duration: Object {start_date, end_date}

- location: Object {cluster, coordinates}

- status: 'active' | 'filled' | 'expired' | 'closed'

- views_count, response_count: Integer

- created_at, updated_at, expires_at: ISODate

7.1.3 Responses Collection

Key Fields:

- _id: ObjectId

- post_id: ObjectId (reference to work_posts)

- worker_id: ObjectId (reference to users)

- businessman_id: ObjectId

- worker_contact: Object {name, phone, whatsapp, skills, rating}

- businessman_contact: Object {name, business_name, phone, address}

- status: 'contacted' | 'working' | 'completed'

- responded_at: ISODate

7.2 Data Dictionary

Entity	Attribute	Type	Constraints	Description
User	phone	String	Unique, Regex pattern	Primary identifier
User	gst_number	String	Optional, 15-char format	GST verification
User	role	Enum	businessman | worker	User type
Work Post	rate_per_meter	Decimal	Min: 1.50, Max: 10.00	Rate in INR
Work Post	worker_count	Integer	Min: 1, Max: 50	Workers needed
Work Post	status	Enum	active, filled, expired, closed	Post lifecycle
Rating	scores	Object	Each criterion: 1-5	Rating breakdown

7.4 Data Retention Policy

[DATA-001] Work Posts: Active posts retained indefinitely, Filled/Expired posts retained for 1 year, Archived after 1 year

[DATA-002] User Data: Active users retained indefinitely, Inactive users (no login for 2 years) soft deleted with 30-day recovery

[DATA-003] Responses: All responses retained for 2 years (connections history)

[DATA-004] Ratings: Retained indefinitely (core trust data)

[DATA-005] Messages: Retained for 60 days after connection, then auto-deleted (GDPR)

[DATA-006] Images: Profile photos retained while account active, Fabric samples retained for 90 days post-expiry

8. SECURITY REQUIREMENTS

8.1 Authentication Flow

OTP-Based Authentication:

1. User enters phone number

2. System sends 6-digit OTP via SMS (10-minute expiry)

3. User enters OTP

4. System verifies OTP

5. System issues JWT token (7-day expiry for web, 30-day for mobile)

6. Token stored securely (httpOnly cookie for web, secure storage for mobile)

OTP Security Measures:

• Max 5 attempts per phone per hour

• After 5 failed attempts: 1-hour lockout

• Rate limiting on OTP generation endpoint

8.2 Authorization Matrix

Resource	Businessman	Worker	Admin
Create Work Post	✓	✗	✓
View Work Posts	✓	✓	✓
Respond to Post ('Yes')	✗	✓	✗
View Responses	✓ (own posts)	✗	✓
Rate User	✓	✓	✓
View Contact Details	✓ (after connection)	✓ (after connection)	✓
Export Data	✓ (own)	✓ (own)	✓ (all)

8.3 Data Privacy (GDPR/DPDPA Compliance)

[SEC-001] Consent: Explicit consent for phone number usage (registration form), Consent for WhatsApp notifications (opt-in checkbox), Consent for location access

[SEC-002] Right to Access: Users can download their data (JSON export via API)

[SEC-003] Right to Deletion: Users can request account deletion, Contact details in existing connections anonymized, 30-day grace period before permanent deletion

[SEC-004] Data Minimization: Collect only essential data, No device fingerprinting, No tracking pixels

[SEC-005] Contact Detail Protection: Phone numbers never exposed in public API responses, Shared only after explicit 'Yes' response, Cannot be scraped or bulk-exported

8.4 Security Testing

[SEC-006] Annual third-party security audit

[SEC-007] Quarterly vulnerability scans (OWASP Top 10)

9. QUALITY ATTRIBUTES

9.1 Testability

Unit Tests: All service functions (70% coverage minimum), Jest framework

Integration Tests: API endpoints (happy path + error cases), Critical flows tested

End-to-End Tests: Cypress for web app, Detox for mobile app

Performance Tests: Load testing with 1,000 concurrent users (Apache JMeter / k6)

9.2 Monitoring and Logging

[MON-001] Error Tracking: Sentry for frontend + backend errors, Alert on > 20 errors/minute

[MON-002] Performance Monitoring: Datadog APM for API response times, Alert on p95 latency > 1 second

[MON-003] Uptime Monitoring: Pingdom / UptimeRobot for endpoint health, Alert on downtime > 5 minutes

[MON-004] Logs: Structured JSON logs (Winston library), 30-day retention in Elasticsearch, PII redaction in logs

[MON-005] Business Metrics: Daily active users (DAU), Posts created per day, Response rate, Connection rate, Rating completion rate

10. CONSTRAINTS AND ASSUMPTIONS

10.1 Technical Constraints

[CON-001] WhatsApp Business API requires Facebook Business verification (3-6 weeks), Costs ■0.40-1.00 per notification

[CON-002] GST Verification API free tier: 500 calls/day, Paid tier required for high-volume

[CON-003] Mobile app size must be < 15 MB (worker network constraints)

[CON-004] Budget: Phase 1 development ■15-20 lakh, Monthly operational cost ■30,000-50,000

[CON-005] Google Maps API costs: $5 per 1,000 requests (geocoding + distance matrix)

10.2 Assumptions

[ASM-001] User Device: Workers have smartphones (Android 8+ or iOS 13+), Businessmen have desktop/laptop or tablet

[ASM-002] Market: Surat textile industry operates 6 days/week, Average work duration 15-30 days, Workers willing to commute up to 15 km

[ASM-003] User Behavior: Workers check app 2-3 times daily, Businessmen check web dashboard 1-2 times daily, Both parties will rate after work completion

[ASM-004] Trust Building: Initial cold start problem (no ratings), Takes 3-6 months to build trust network

11. APPENDICES

Appendix B: Glossary

Term	Definition
Businessman	Factory owner or manager who posts work requirements
Worker	Skilled textile laborer seeking work opportunities
Cluster	Industrial zone in Surat (e.g., Pandesara, Sachin, Udhna)
Work Post	Job requirement posted by businessman
Response	Worker's 'Yes' action indicating interest
Connection	Established link between businessman and worker after response
Rate per Meter	Payment per meter of fabric produced (INR)
Rapier Loom	Weaving machine using rapier rods
Water-Jet Loom	High-speed weaving machine using water jets
GST	Goods and Services Tax (Indian business tax ID)
OTP	One-Time Password for authentication
GIDC	Gujarat Industrial Development Corporation

Appendix C: Acronyms

Acronym	Full Form
SRS	Software Requirements Specification
MERN	MongoDB, Express, React, Node.js
API	Application Programming Interface
JWT	JSON Web Token
OTP	One-Time Password
GST	Goods and Services Tax
SMS	Short Message Service
PWA	Progressive Web App
WCAG	Web Content Accessibility Guidelines
GDPR	General Data Protection Regulation
DPDPA	Digital Personal Data Protection Act (India)
AWS	Amazon Web Services
CDN	Content Delivery Network
TLS	Transport Layer Security

Document Approval

Role	Name	Signature	Date
Product Owner	[Name]	_____	_____
Technical Lead	[Name]	_____	_____
QA Manager	[Name]	_____	_____
Business Stakeholder	[Name]	_____	_____

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