Product Requirements & Specs

Working name: FieldLite CRM
Target users: Local/home-service SMBs (insulation, fencing, pool care, demolition, pest control, tree removal, hauling, water filtration) with 1–50 employees.

Positioning: Mid-tier, opinionated, fast to deploy, field-ready (quotes → jobs → invoices → payments) with built-in automations. Not a heavy ERP; more than a contacts app.

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1) Core Jobs-to-Be-Done

1. Capture leads from web forms, phone, and SMS; auto-qualify and schedule estimates.
2. Convert estimates to work orders, dispatch techs, and track time/materials.
3. Generate invoices, take payments, and sync to accounting.
4. Keep customers informed via SMS/email with status updates and reminders.
5. See pipeline, revenue, and utilization at a glance.

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2) Personas & Primary Workflows

- **Owner/Operator (O/O):** wants pipeline, cashflow, job profitability, ads ROI.
- **Office Manager/CSR:** intakes leads, books estimates, answers phones/SMS.
- **Estimator:** performs site visits, builds quotes with pricebook, wins deals.
- **Technician/Crew Lead:** receives schedule, completes tasks, collects sign-off & photos.
- **Bookkeeper:** reconciles invoices, payouts, refunds, taxes.

Happy path: Lead → Qualification → Estimate → Approval → Job (scheduled) → Completion docs → Invoice → Payment → Review request → Job closeout.

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3) Scope (Mid-Tier)

Included - Lead inbox (omnichannel: web form, email forward, SMS, call log). - Lightweight marketing attribution (UTM, source, campaign, keyword). - Pipeline (custom stages, Kanban + list views, filters, bulk actions). - Estimates & pricebook (assemblies, templates, tax rules, discounts, signatures). - Scheduling & dispatch (day/week/route view; drag-drop; travel time ETA). - Mobile field app (PWA): clock-in, checklists, photo capture, notes, signatures. - Work orders & job tasks (dependencies, required photos, pass/fail checklists). - Inventory (simple): items, cost, location/bin, low-stock alerts. - Invoicing & payments (Stripe) incl. deposits, partials, surcharges, tips. - Messaging: SMS & email templates, 2-way thread per contact/job. - Reviews & NPS prompts; Google review link; testimonial capture. - Reporting: pipeline, bookings, job margin, technician utilization, source ROI. - Roles/permissions; audit trail; GDPR/CCPA delete & export.

Excluded (later) - Complex project accounting, multi-entity consolidations. - Native payroll; advanced inventory with barcodes. - Built-in dialer (use VoIP integrations first).

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4) Data Model (Relational)

contacts
- id (pk), type [lead, customer, vendor], first_name, last_name, company, phones[], email, address (JSON: street, city, state, zip, lat, lng), tags[], lead_source, owner_user_id, created_at, updated_at.

deals
- id, contact_id (fk), title, stage [new, qualified, estimating, quoted, won, lost], probability, expected_close_date, source, campaign, est_amount, won_amount, lost_reason, created_at, updated_at.

estimates
- id, deal_id, number, status [draft, sent, accepted, declined, expired], subtotal, discounts, tax, total, valid_until, terms, signer_name, signer_email, signed_at, pdf_url.

estimate_items
- id, estimate_id, catalog_item_id, description, qty, uom, unit_price, cost, tax_rate_id, line_total.

catalog_items (pricebook)
- id, sku, name, category, description, default_uom, unit_price, unit_cost, tax_rate_id, is_bundle, bundle_items JSON.

jobs
- id, deal_id, estimate_id, number, status [scheduled, in_progress, paused, complete, canceled], scheduled_start, scheduled_end, address, crew_id, required_checklists[], required_photos, notes.

job_tasks
- id, job_id, title, status [todo, doing, done], assignee_user_id, required_photo?, checklist JSON.

time_logs
- id, job_id, user_id, clock_in, clock_out, duration_minutes, gps_start, gps_end.

inventory_lots
- id, catalog_item_id, location, qty_on_hand, avg_cost, reorder_point.

job_materials
- id, job_id, catalog_item_id, qty_used, cost_at_use.

invoices
- id, job_id, number, status [draft, sent, partial, paid, overdue, void], subtotal, tax, total, amount_due, due_date, deposit_required, external_ref (QB), pdf_url.

payments
- id, invoice_id, amount, method [card, ach, cash, check], processor [stripe], processor_intent_id, status, paid_at, fee.

messages
- id, thread_id, direction [inbound,outbound], channel [sms,email], from, to, body, attachments[], related_type [contact, deal, job, invoice], related_id, sent_at, read_at.

users
- id, name, email, phone, role [owner, manager, estimator, tech, bookkeeper], permissions JSON, active, last_login.

files
- id, owner_id, related_type, related_id, name, url, mime, size, created_at.

audit_logs
- id, actor_user_id, action, entity_type, entity_id, before JSON, after JSON, ts.

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5) Integrations (Phase 1)

- **Payments:** Stripe (Cards/ACH, Payment Links, subscriptions for service plans).
- **Accounting:** QuickBooks Online sync (customers, invoices, payments, items, taxes).
- **Calendars:** Google Calendar (per-user), ICS feed.
- **Telephony/SMS:** Twilio or Telnyx for 2-way SMS; bring-your-own DID.
- **Email:** SendGrid or AWS SES (transactional + inbound parse).
- **Forms/Website:** Embed lead form + Webhook/n8n/Zapier listener.
- **Maps/Routes:** Google Maps or Mapbox (geocode, distance matrix ETA).
- **Reviews:** Google Business Profile deep link generator.

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6) Automations & Templates

Event triggers
- Lead created, status changed, estimate sent/accepted/expired, job scheduled/ETA, tech en-route, job completed, invoice sent/overdue, payment received, review requested.

Actions
- Send SMS/email, assign owner, change stage, create task, create job, add tag, create invoice, apply deposit, push to QB, webhook emit.

Prebuilt flows
- 1) *Lead nurture:* Day 0 text + Day 2 follow-up + Day 5 “still interested?”
- 2) *Estimate chase:* Send estimate → 48h reminder → 7-day last-chance.
- 3) *Job reminders:* T-24h confirm, T-1h “on the way”, photo checklist on start.
- 4) *Review boost:* On payment → 2h thank-you → 1d review link → 7d NPS.

Template packs
- SMS: estimate ready, appointment confirm, tech en-route, payment link.
- Email: quote PDF, invoice, overdue reminder, service plan renewal.

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7) Scheduling/Dispatch Details

- Calendar views: Day/Week, Resource (by crew/tech), Map (route density).
- Constraints: skills, required equipment (truck/trailer), service zones, time windows.
- Route assist: optimize sequence by drive time, buffer for load/unload.
- ETA sharing: customer link with live “On our way” tracking (optional GPS from mobile PWA).

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8) Permissions & Security

- Roles: Owner (all), Manager (teams, P&L), Estimator (leads/deals/estimates), Tech (assigned jobs only), Bookkeeper (billing + reports).
- Row-Level Security (RLS) by tenant_id; per-entity ACL for sensitive docs.
- SSO (email+OTP, Google OAuth).
- Audit logging (CRUD + login).
- PII encryption at rest for phones/emails; secrets in KMS.
- Backups: daily full + PITR; export to S3/GCS.

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9) Analytics & KPIs

- Pipeline $ by stage, win rate, cycle time.
- Job margin = (Invoice – Materials – Labor est) / Invoice.
- Tech utilization = billable hours / total hours.
- Source ROI: revenue & CPA by campaign/keyword (UTM).
- A/R aging, DSO, deposit coverage.
- SLA: response time to new lead, schedule lead time, on-time arrival %.

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10) Tech Stack (suggested)

- **Frontend:** Next.js (App Router), React Server Components, Tailwind; PWA for field.
- **Backend:** FastAPI or Next.js API routes; background workers (Celery/RQ/Temporal).
- **DB:** Postgres (Supabase) with RLS; Redis for queues/caching; S3-compatible storage.
- **Infra:** Vercel (web), Render/Railway (workers), Supabase (DB/auth/storage).
- **Integrations:** Stripe, QuickBooks, Twilio/Telnyx, SendGrid/SES, Maps API.
- **Observability:** OpenTelemetry, Sentry, pgAudit, worker dashboards.

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11) API (selected endpoints)

Auth
- POST /auth/login (email OTP), POST /auth/google, POST /auth/logout

Leads/Contacts
- GET/POST /contacts, GET /contacts/:id, PATCH /contacts/:id
- POST /webhooks/lead (public) → validates HMAC → creates contact & deal

Deals & Estimates
- GET/POST /deals, PATCH /deals/:id
- POST /deals/:id/estimates
- POST /estimates/:id/send
- POST /estimates/:id/accept (signature payload)

Jobs & Scheduling
- GET/POST /jobs, PATCH /jobs/:id
- POST /jobs/:id/assign
- POST /jobs/:id/status (in_progress|complete)

Invoices & Payments
- POST /jobs/:id/invoices
- POST /invoices/:id/send
- POST /invoices/:id/pay (creates Stripe PaymentIntent)
- POST /stripe/webhook

Messages
- POST /messages/sms, POST /messages/email
- POST /webhooks/twilio

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12) UI Modules (Wireframe Notes)

- **Lead Inbox:** left filters (status/source/owner); middle list; right detail with 2-way SMS; quick convert → estimate.
- **Board:** Kanban by stage; drag to move; side drawer for edit.
- **Estimate Builder:** pricebook search, assemblies, photos, taxes, preview PDF, 'Send'.
- **Schedule:** crew lanes; map pane toggle; conflict warnings.
- **Job View:** tasks, checklists, required photos, materials, time clock.
- **Billing:** invoices, A/R aging, payouts; payment links.
- **Reports:** saved views, CSV export, schedule email weekly.

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13) Pricebook & Estimating (Details)

- Catalog categories (Labor, Materials, Equipment, Disposal).
- Assemblies = nested items with overridable qty/price.
- Tax profiles per jurisdiction; rounding rules; per-line or summary discounts.
- Multi-option quotes (Good/Better/Best) with accept-one logic.

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14) Compliance & Regionals (U.S. focus)

- Separate labor vs. materials on invoice (some states require).
- E-signature compliant timestamps & IP logs.
- Photo & document retention policy configurable per tenant.

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15) Migration & Imports

- CSV imports: contacts, pricebook, existing deals, items, taxes.
- QuickBooks pull of customers/items on first-time connect.
- Phone number porting guide (for SMS).

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16) SLA & Performance Targets

- P95 API latency < 250ms (read), < 500ms (write).
- Uptime 99.9% monthly; RPO ≤ 1h; RTO ≤ 2h.
- Cold start pages < 2.5s LCP on 4G field devices.

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17) Roadmap (90-day plan)

MVP (Weeks 1–6)
- Tenancy, auth, RLS, contacts, deals, basic pipeline.
- Lead form + webhook, estimate builder v1, PDF, e-sign.
- Jobs & schedule v1, mobile PWA (checklists/photos/time clock).
- Invoices & Stripe payments.
- Twilio SMS (2-way) + templates.
- Reports v1: pipeline, bookings, simple margin.

V1.1 (Weeks 7–10)
- QuickBooks sync, review requests, ETA tracking links, route assist.
- Source ROI dashboard, saved reports + email schedules.
- Inventory light + low-stock alerts.

V1.2 (Weeks 11–13)
- Service plans/subscriptions, deposits/partials, AR aging.
- Role granular perms, audit exports, advanced tax rules.

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18) Success Metrics

- <7 days to first invoice paid (TTFV).
- ≥ 20% faster estimate-to-win time.
- ≥ 15% increase in on-time arrivals.
- ≥ 2 more reviews per 100 jobs.

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19) Configuration & Admin

- Company profile, service zones, tax rates, business hours/holidays.
- Crew definitions (skills, equipment).
- Numbering sequences (EST-####, JOB-####, INV-####).
- Webhooks out; n8n/Zapier app; API keys & HMAC secrets.

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20) Edge Cases & Policies

- No-show / reschedule → automated rebooking link.
- Multi-day jobs (split shifts) & rain delays.
- Change orders (delta estimate) with customer e-sign.
- Refunds/chargebacks flow with accounting notes.

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21) Nice-to-Have (Post-V1)

- AI assist: pricebook suggestions, upsells, auto-draft estimates from photos/notes.
- Embedded calls with recording & transcript.
- Offline mode for PWA (sync on reconnect).
- Fleet GPS integration (Geotab/Samsara) for live truck location.

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22) Sample Tables (DDL Sketch)

```sql
-- Tenancy
CREATE TABLE tenants (
  id uuid PRIMARY KEY DEFAULT gen_random_uuid(),
  name text NOT NULL, plan text NOT NULL DEFAULT 'pro'
);
```

```sql
CREATE TABLE contacts (
  id uuid PRIMARY KEY DEFAULT gen_random_uuid(),
  tenant_id uuid REFERENCES tenants(id) ON DELETE CASCADE,
  type text CHECK (type IN ('lead','customer','vendor')),
  first_name text, last_name text, company text,
  phones text[], email text, address jsonb,
  tags text[], lead_source text, owner_user_id uuid,
  created_at timestamptz DEFAULT now(), updated_at timestamptz DEFAULT now()
);

CREATE TABLE deals (
  id uuid PRIMARY KEY DEFAULT gen_random_uuid(),
  tenant_id uuid REFERENCES tenants(id) ON DELETE CASCADE,
  contact_id uuid REFERENCES contacts(id),
  title text, stage text, probability int,
  expected_close_date date, source text, campaign text,
  est_amount numeric, won_amount numeric, lost_reason text,
  created_at timestamptz DEFAULT now(), updated_at timestamptz DEFAULT now()
);
```

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23) Pricing & Packaging (suggested)

- **Starter ($49/mo):** 1 user, basics: contacts, pipeline, estimates, invoices, payments, SMS pay-as-you-go.
- **Pro ($149/mo):** up to 5 users, scheduling/dispatch, mobile PWA, automations, review requests, basic reports.
- **Team ($299/mo):** up to 15 users, QuickBooks sync, inventory light, route assist, advanced reports, API keys.
- **Add-ons:** Extra users $15/mo; phone numbers at cost; storage overage; white-label $99/mo.

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24) Go-to-Market Notes

- Import wizard + concierge migration.
- Verticalized templates (insulation, fencing, pool, demolition, pest).
- Partner directory (installers/consultants).
- Case studies focused on time-to-cash and reviews growth.

Ready to build: Use this PRD as the baseline. Next step: generate issue tracker epics & tickets from Sections 3–12 and scaffold the DB + API from Section 22.