Project Scope: Workshop Intelligence System

1. Overview

This document outlines the comprehensive scope for developing the Workshop Intelligence System (WIS) - an AI-powered workflow automation platform designed specifically to digitize and optimize the "Brimis 11 Steps for Service Excellence."

The system replaces manual job cards and paper-based reporting with a tablet-first application that guides technicians through every step of the repair process. By leveraging Computer Vision for defect detection and Generative AI for automated technical reporting, WIS is designed to reduce administrative overhead by 60%, accelerate quote turnaround times, and enforce strict compliance with the 11-step engineering protocol.

2. Problem Statement

Industrial workshops face a critical "Efficiency Gap" between the physical work (repairing equipment) and the administrative work (reporting and quoting).

Currently, the Brimis workflow relies on manual inputs at critical stages:

- **Information Silos:** Photos taken on phones must be manually transferred to computers to create reports, leading to lost data and delays.
- **The "Quote Lag":** Equipment sits idle on the floor (Step 6) waiting for a Purchase Order (PO) because generating technical reports (Step 5) is labor-intensive.
- **Compliance Risks:** Physical job cards can be lost, or steps (like Hazmat checks in Step 2 or QC checks in Step 10) can be accidentally skipped without digital enforcement.
- **Lack of Visibility:** Clients lack real-time transparency, resulting in frequent status-check calls.

There is a critical need for a system that "locks" the workflow to ensure compliance (Step-Gating) while using AI to automate the heavy lifting of report writing and defect identification.

3. Objectives & Success Metrics

Objective: To build a production-ready Workshop Intelligence System that digitizes the 11-Step Process, enforces quality gates, and automates client communication.

Success Metrics:

- **Deployment:** Fully functional web/mobile app deployed within 4-5 weeks.
- **Quote Speed:** Reduce time-to-quote by **70%** (via AI report generation).
- **Compliance:** Achieve **100%** digital QCP completion for every job (system prevents progression if steps are missed).

- **Revenue:** Increase workshop throughput by **15%** by reducing "waiting for PO" downtime.
- **Client Experience:** Provide clients with a live "Tracker" view of their equipment status.

4. Core Components & Technology Stack (BMAD Architecture)

Component	Technology / Approach	Role
Frontend Framework	**Next.js 14 (App Router)**	Responsive tablet interface for technicians and desktop dashboard for managers.
Mobile Experience	**PWA (Progressive Web App)**	Allows technicians to use the app offline in the workshop and sync data when online.
AI Reporting Engine	**Anthropic Claude 3.5 Sonnet**	Converts technician bullet points into formal "Technical Reports" instantly.
Visual Inspection	**Google Cloud Vision API**	Analyzes photos of stripped parts to auto-tag defects (e.g., "Corrosion," "Crack").
Database	**Supabase (PostgreSQL)**	Stores complex relationships between Jobs, Parts, and Clients with real-time subscriptions.
Storage	**Goolge Drive/Google Cloud**	Securely stores high-resolution images of equipment repairs.
Client Gateway	**Secure Magic Links**	Allows clients to view quotes and digitally sign POs without logging in.

5. System Architecture & Feature Modules

The system is built around the **11-Step Logic Engine**, ensuring no step is skipped.

Module 1: Intake & Triage (Steps 1-2)

- **Digital Receiving Log:** Technicians scan a QR code or enter a serial number to "Check In" an item.
- **Hazmat Logic:** A mandatory "Hazardous Chemical" toggle in Step 2. If active, the system enforces the "Chemical Cleaning Procedure" checklist before Step 3 can begin.
- **QR Generation:** System generates a unique Job ID (e.g., BRIM-2025-001) and prints a physical QR tag.

Module 2: AI Inspector & Report Writer (Steps 3-5)

- **Photo Evidence:** Technician snaps photos of damage directly in the app.
- **AI Analysis:** System scans photos to suggest labels (e.g., "Heavy Pitting," "Worn Seal").
- **GenAI Report:** Technician inputs raw notes. The AI compiles photos, fault list, and recommendations into a branded PDF Technical Report (Step 5 Output).

Module 3: Client Portal & "Fast-Track" Approval (Step 6 Gate)

- **Interactive Quote Link:** System sends an SMS/Email link to the client.
- **Digital PO:** Client clicks "Approve Quote" -> System captures digital signature -> System marks Job as "PO Received."
- **Work Unlocking:** The "Repair" button (Step 6) on the Technician's tablet is **locked** (greyed out) until the Client approves the quote.

Module 4: Execution, QC & Dispatch (Steps 6-11)

- **Digital QCP:** Specific measurements (micrometer readings) must be entered in Step 7 & 10.
- **Step 8 Assembly Guide:** App displays the photos taken in Step 3 to guide correct re-assembly orientation.
- **Dispatch Block:** System prevents printing of Delivery Notes (Step 11) until all QC checks are green.

6. User Workflows

Workflow 1: The Technician (Workshop Floor)

1. Scans QR code on pump.
2. App opens to **Step 3: Strip & Assess**.
3. Takes photo of damaged seal.
4. Voice-to-text note: "Seal completely worn, needs OEM replacement."
5. Clicks "Complete Step." System advances job to **Step 5**.

Workflow 2: The Manager (Office)

1. Receives notification: "Job #1234 Ready for Quote."
2. Reviews AI-generated Technical Report.

3. Adds pricing for the seal from inventory.
4. Clicks "Send to Client."

Workflow 3: The Client (Remote)

1. Receives SMS: "Your Quote for Job #1234 is ready."
2. Opens link, reviews photos of damage.
3. Signs on screen.
4. (Simultaneously, the Technician's tablet pings: "PO Received - Proceed to Step 6").
5. Technical Implementation Details

Frontend Architecture

```
workshop-app/
├── app/
│   ├── technician/             # Tablet Interface
│   │   ├── step/[id]/page.tsx   # Dynamic Step Wizard
│   │   └── camera/page.tsx      # Custom Camera View
│   ├── manager/                # Desktop Interface
│   │   ├── dashboard/page.tsx   # Kanban Board
│   │   └── quotes/page.tsx      # Approval Queue
│   └── client/                 # Public Portal
│       └── quote/[token]/page.tsx # Magic Link View
├── lib/
│   ├── ai-vision.ts            # Google Vision Integration
│   ├── ai-report.ts            # Claude Integration
│   └── workflow-engine.ts      # The 11-Step State Machine
```

Real-Time Update Mechanism

- **Supabase Realtime:** Pushes updates instantly. When a client signs a quote, the Technician's screen updates from "Locked" to "Ready" without refreshing.

8. Investment & Pricing

Option A: Managed Service (Recommended) *Includes hosting, AI costs, and ongoing support.*

- **Initial Setup & Development: R95,000**
  - Full system build and customization.
  - Digitization of specific Brimis QCP forms.
  - User training (Technicians & Managers).
- **Monthly Subscription: R14,500/month**
  - Vercel Enterprise Hosting.
  - Up to 5,000 AI Vision/Text queries per month.
  - 24/7 System monitoring & Daily Backups.

Option B: Self-Hosted *Client owns the code and hosts on their own servers.*

- **Development Fee: R145,000**
    - Full source code handover.
    - Server configuration (Ubuntu/Node.js).
- **Ongoing Support (Optional): R6,500/month**
    - Bug fixes and security patches only.
    - *Note: Client pays own Cloud/AI API fees (~R3,000 - R6,000/mo).*

9. Project Timeline & Milestones

Week 1: Blueprint & Branding

- Requirements validation with Workshop Manager.
- Digitizing the QCP forms.
- **Deliverable:** UI Mockups of the Technician Tablet View.

Week 2-3: Core Development

- Building the 11-Step Logic Engine.
- Integrating AI Report Writer and Vision API.
- **Deliverable:** Functional Digital Job Card.

Week 4: Integration & Client Gateway

- Building the Quote-to-PO workflow.
- Setting up Client Portal.
- **Deliverable:** End-to-end flow from Receiving to Dispatch.

Week 5: Launch & Training

- On-site training with technicians (Tablet usage).
- Live testing on real jobs.
- **Deliverable:** Go-Live.

10. ROI Projection (Year 1)

Cost Savings Analysis

- **Admin Time Savings:** Automating report writing saves ~1.5 hours per job.
    - 50 jobs/month x 1.5 hours x R500/hr = **R450,000/year**.
- **Reduced "Floor Rent":** Faster PO approval reduces idle time by ~20%.
    - Est. Operational Value: **R200,000/year**.
- **Dispute Reduction:** High-quality photo evidence prevents "pre-existing damage" claims.
    - Est. Value: **R50,000/year**.

Total Est. First Year Value: R700,000+ Payback Period: < 2.5 Months

11. Terms & Conditions

Intellectual Property

- NOVATEK retains ownership of the core "Workshop Intelligence" codebase.
- Client receives a perpetual, non-exclusive license to use the system.
- All client data (Job history, Client lists) remains the property of the client.

Warranties & Guarantees

- 90-day bug-fix warranty from go-live date.
- 99.9% Uptime guarantee on Managed Hosting option.

12. Next Steps

To proceed with the Workshop Intelligence System implementation, NOVATEK recommends the following action plan:

Step 1: Approve Scope & Sign Service Agreement. **Step 2:** Schedule "Discovery Day" for NOVATEK to shadow a technician. **Step 3:** Kickoff Development.

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