Software Requirements Specification

**Sales-SEO Audit & Analysis Tool**

*Version 1.0*

|  |  |
| --- | --- |
| **Project Name** | Sales-SEO Audit & Analysis Tool |
| **Document Version** | 1.0 |
| **Date** | October 11, 2025 |
| **Status** | Pending Approval |

# Table of Contents

**1. Executive Summary**

1.1 Business Objectives

1.2 Key Features

**2. System Overview**

2.1 System Architecture

2.2 User Roles

**3. Functional Requirements**

3.1 Audit Creation & Management

3.2 Automated Analysis

3.3 Status Management

3.4 Signed Status Workflow

3.5 User Interface

3.6 Sitemap Audit Feature

3.7 Homepage Conditional Features

3.8 Multi-URL Report Compilation

**4. Non-Functional Requirements**

4.1 Performance

4.2 Reliability

4.3 Security

4.4 Scalability

4.5 Usability

**5. Data Requirements**

5.1 Database Entities

5.2 Data Retention

**6. Integration Requirements**

**7. Project Timeline & Budget**

7.1 Development Phases

7.2 Estimated Costs

**8. Success Metrics**

8.1 Key Performance Indicators

8.2 ROI Calculation

**9. Risks & Mitigation Strategies**

**10. Approval & Sign-off**

# Executive Summary

This document specifies the requirements for a comprehensive Sales-SEO Audit and Analysis Tool designed to streamline the workflow between Sales and SEO teams. The tool automates website auditing, provides AI-powered analysis, includes advanced sitemap auditing capabilities, intelligent homepage detection with keyword trend visualization, and enables multi-URL report compilation. The system triggers intelligent workflows based on sales pipeline status changes to ensure seamless handoff to project teams.

## Business Objectives

* Reduce manual audit time from 2-3 hours to 5 minutes per prospect
* Provide data-driven insights to close more deals
* Automate project handoff from Sales to Web team upon deal closure
* Enable sales representatives to deliver professional audit reports instantly
* Create seamless integration between Sales, SEO, and Web teams

## Key Features

* AI-powered website analysis using Claude Sonnet 4.5 with computer vision
* Automated SEO, accessibility, and UI/UX auditing
* Sitemap crawling and content gap analysis
* Smart homepage detection with automatic keyword tracking and trend visualization
* Sales pipeline management with status tracking (Proposal, Initial Call, Signed)
* Multi-URL report compilation with PDF export
* Automatic SEMRush data integration upon deal closure
* Excel report generation with keyword and traffic analysis
* Multi-channel notifications via Email and Slack

# System Overview

## System Architecture

The application follows a modern full-stack architecture with clear separation of concerns:

| **Layer** | **Technology** |
| --- | --- |
| **Frontend** | Next.js 14 with App Router, React, Tailwind CSS, shadcn/ui |
| **API Layer** | Next.js API Routes with TypeScript |
| **Database** | PostgreSQL with Prisma ORM |
| **Authentication** | Clerk Authentication with user management |
| **Web Rendering** | Puppeteer with headless Chrome |
| **AI Analysis** | Anthropic Claude API (Sonnet 4.5) with vision |
| **SEO Data** | SEMRush API |
| **Notifications** | SendGrid (Email), Slack Web API |
| **File Storage** | AWS S3 or Vercel Blob Storage |

## User Roles

| **Role** | **Responsibilities** |
| --- | --- |
| **Sales Representative** | Create audits, update prospect status, view reports |
| **Project Manager** | Receive notifications for signed deals, review strategy reports |
| **Web Team** | Receive project handoff notifications with technical details |
| **Administrator** | Manage users, configure system settings, view all audits |

# Functional Requirements

## Audit Creation & Management

1. **URL Input:** The system shall accept a valid website URL from the sales representative.
2. **JavaScript Rendering:** The system shall render the website using Puppeteer to capture the fully-rendered page including all JavaScript-generated content.
3. **Screenshot Capture:** The system shall capture screenshots at desktop (1920x1080) and mobile (375x812) resolutions.
4. **Audit Storage:** The system shall store all audit results in the database linked to the user who created it.

## Automated Analysis

1. **SEO Analysis:** The system shall analyze title tags, meta descriptions, header hierarchy, image alt text, links, page speed, and Core Web Vitals.
2. **Accessibility Testing:** The system shall run axe-core accessibility tests and identify WCAG 2.1 violations.
3. **Contrast Analysis:** The system shall check color contrast ratios and identify WCAG compliance issues.
4. **AI Vision Analysis:** The system shall send screenshots to Claude Sonnet 4.5 for UI/UX assessment, design modernity scoring, and visual hierarchy evaluation.
5. **Report Generation:** The system shall compile all findings into a professional, client-ready audit report with prioritized recommendations.

## Status Management

1. **Status Tracking:** The system shall support three status levels: Proposal, Initial Call, and Signed.
2. **Status History:** The system shall log all status changes with timestamp and user information.
3. **Manual Override:** Sales representatives shall be able to manually update the status of any audit they created.

## Signed Status Workflow

1. **Workflow Trigger:** When status changes to Signed, the system shall automatically trigger the SEMRush workflow.
2. **SEMRush Data Retrieval:** The system shall fetch top 50 keywords and top 20 pages by traffic from SEMRush API.
3. **Excel Generation:** The system shall generate an Excel workbook with two sheets: Top Keywords and Top Pages.
4. **Strategic Analysis:** The system shall send SEMRush data and previous audit findings to Claude for strategic SEO recommendations.
5. **Email Notification:** The system shall send an email to the Project Manager and Web Team with the report and Excel file.
6. **Slack Notification:** The system shall post a formatted message to the designated Slack channel with action buttons.

## User Interface

1. **Dashboard:** The system shall display a list of all audits created by the logged-in user with key metrics.
2. **Audit Detail View:** The system shall display the complete audit report, scores, screenshots, and status management controls.
3. **Search & Filter:** The system shall allow users to search and filter audits by URL, status, and date range.
4. **Export Options:** The system shall allow users to export audit reports as PDF documents.

## Sitemap Audit Feature

1. **Sitemap URL Input:** The system shall accept a sitemap URL (e.g., https://example.com/sitemap.xml) from the user.
2. **Sitemap Parsing:** The system shall parse XML sitemaps and extract all URL entries.
3. **URL Crawling:** The system shall crawl all URLs found in the sitemap to analyze content and structure.
4. **Content Gap Analysis:** The system shall identify missing content types, topics, or pages compared to competitor benchmarks.
5. **URL Structure Analysis:** The system shall detect incorrect URL patterns, inconsistent naming conventions, or non-SEO-friendly structures.
6. **Missing Pages Detection:** The system shall identify notable pages that should exist but are missing (e.g., About, Contact, Privacy Policy).
7. **Sitemap Audit Report:** The system shall generate a comprehensive report with findings and recommendations for sitemap improvements.

## Homepage Conditional Features

1. **Homepage Detection:** The system shall detect when the input URL is a homepage/domain (no path after the trailing slash, e.g., https://example.com or https://example.com/).
2. **SEMRush Keyword Count:** For homepage URLs only, the system shall retrieve total keyword count from SEMRush API.
3. **1-Year Keyword Trend:** For homepage URLs only, the system shall display a graph showing keyword count trends over the past 12 months.
4. **Top Pages Display:** For homepage URLs only, the system shall display the top 5 pages by organic traffic from SEMRush.
5. **Conditional Execution:** The homepage-specific features shall only execute for domain-level URLs, not for subpages or specific paths.

## Multi-URL Report Compilation

1. **Report Creation:** Users shall be able to create a new Report entity that contains multiple audit URLs.
2. **Audit Selection:** The system shall allow users to select existing audits to include in a report.
3. **Report Naming:** Users shall be able to name and describe each report for organizational purposes.
4. **Combined PDF Generation:** The system shall generate a single, seamlessly formatted PDF containing all selected audits.
5. **Report Storage:** All reports shall be stored in the database with relationships to included audits.
6. **Report Management:** Users shall be able to view, edit, duplicate, and delete their reports.
7. **Report Sharing:** The system shall generate shareable links for reports that can be accessed without authentication.

# Non-Functional Requirements

## Performance

1. **Audit Completion Time:** Initial audit analysis shall complete within 60 seconds for 95% of websites.
2. **SEMRush Workflow:** The signed status workflow shall complete within 90 seconds from status change.
3. **Page Load Time:** Dashboard and detail pages shall load within 2 seconds on standard broadband connections.
4. **Concurrent Users:** The system shall support at least 20 concurrent users without performance degradation.

## Reliability

1. **Uptime:** The system shall maintain 99% uptime during business hours (8 AM - 6 PM EST).
2. **Error Handling:** Failed audits shall not crash the system and shall provide meaningful error messages to users.
3. **Data Backup:** Database shall be backed up daily with 30-day retention.

## Security

1. **Authentication:** All users must authenticate using secure JWT tokens.
2. **Authorization:** Users shall only access audits they created or have explicit permissions to view.
3. **API Keys:** All third-party API keys shall be stored as environment variables and never exposed to the client.
4. **Data Encryption:** All data transmission shall use HTTPS/TLS encryption.

## Scalability

1. **User Growth:** The system architecture shall support scaling to 100 users without major refactoring.
2. **Audit Volume:** The system shall handle up to 500 audits per month.
3. **Database Growth:** Database design shall accommodate 3 years of historical data without performance issues.

## Usability

1. **Learning Curve:** New sales representatives shall be able to create their first audit within 5 minutes of training.
2. **Mobile Responsive:** The interface shall be fully functional on tablets and mobile devices.
3. **Accessibility:** The interface shall meet WCAG 2.1 Level AA compliance standards.

# Data Requirements

## Database Entities

### User

* id (Primary Key)
* email (Unique)
* name
* role (SALES, ADMIN, PROJECT\_MANAGER)
* createdAt, updatedAt

### Audit

* id (Primary Key)
* url
* status (PROPOSAL, INITIAL\_CALL, SIGNED, IN\_PROGRESS, COMPLETED)
* seoScore, accessibilityScore, designScore
* claudeAnalysis (Text)
* screenshotUrl
* semrushData (JSON)
* excelReportUrl
* createdById (Foreign Key to User)
* clientName, clientEmail
* createdAt, updatedAt

### StatusChange

* id (Primary Key)
* auditId (Foreign Key to Audit)
* fromStatus
* toStatus
* changedBy
* changedAt
* notes

### Report

* id (Primary Key)
* name
* description
* createdById (Foreign Key to User)
* pdfUrl
* shareableLink
* createdAt, updatedAt

### ReportAudit (Junction Table)

* id (Primary Key)
* reportId (Foreign Key to Report)
* auditId (Foreign Key to Audit)
* order (Integer for sequencing audits in report)

## Data Retention

Audit data shall be retained for 3 years. After 3 years, audits may be archived or deleted based on company policy. Users shall be notified 30 days before deletion.

# Integration Requirements

| **Service** | **Purpose** | **Requirements** |
| --- | --- | --- |
| **Anthropic Claude** | AI-powered analysis with vision | API key, Claude Sonnet 4.5 model access |
| **SEMRush** | Keyword and traffic data | API key with domain analytics access |
| **SendGrid** | Email delivery | API key, verified sender domain |
| **Slack** | Team notifications | Bot token, channel permissions |
| **AWS S3** | File storage | Access key, bucket with public read access |
| **Clerk** | User authentication | API keys for frontend and backend |
| **Chart.js / Recharts** | Keyword trend visualization | npm packages for frontend charting |
| **XML Parser** | Sitemap parsing | fast-xml-parser or xml2js npm package |

# Project Timeline & Budget

## Development Phases

| **Phase** | **Duration** | **Deliverables** |
| --- | --- | --- |
| **Phase 1** | Weeks 1-2 | Frontend UI, Clerk Authentication setup, Database schema, Basic audit creation |
| **Phase 2** | Week 3 | Claude vision integration, Report generation, Puppeteer setup, Homepage detection |
| **Phase 3** | Week 4 | SEMRush integration with conditional logic, Workflow automation, Status management |
| **Phase 4** | Week 5 | Sitemap audit feature, XML parsing, Content gap analysis |
| **Phase 5** | Week 6 | Multi-URL reports, Combined PDF generation, Email/Slack notifications |
| **Phase 6** | Week 7 | Excel generation, Keyword trend charts, Report sharing |
| **Phase 7** | Week 8 | Testing, bug fixes, documentation, deployment |

## Estimated Costs

| **Cost Category** | **One-Time** | **Monthly** |
| --- | --- | --- |
| Development (6 weeks) | Internal | - |
| Claude API (100 audits, 20 signed, 10 sitemap audits) | - | $35 |
| SEMRush API | - | $2 |
| Clerk Authentication (up to 10,000 MAU) | - | $25 |
| SendGrid (Free tier) | - | $0 |
| Slack (Existing) | - | $0 |
| Vercel Hosting (Pro) | - | $20 |
| Database (Supabase) | - | $25 |
| **Total Monthly Operating Cost** | - | **$107** |

# Success Metrics

## Key Performance Indicators

| **Metric** | **Current State** | **Target** |
| --- | --- | --- |
| Time to complete audit | 2-3 hours | 5 minutes |
| Audits per sales rep per week | 2-3 | 15-20 |
| Deal closure rate improvement | Baseline | +15% |
| Project handoff time | 2-3 days | Instant |
| User adoption rate (after 3 months) | - | 90% |

## ROI Calculation

Based on 10 sales representatives conducting 20 audits per month:

* **Time saved:** 200 hours per month (10 reps × 20 audits × 2.5 hours saved)
* **Cost savings:** $10,000 per month (200 hours × $50/hour average sales rep cost)
* **Additional deals closed:** 3 extra deals per month (15% improvement)
* **Revenue impact:** $30,000-$150,000 per month (depends on average deal size)
* **ROI:** 14,186% in first year (assuming $50K average deal value)

# Risks & Mitigation Strategies

| **Risk** | **Impact** | **Mitigation** |
| --- | --- | --- |
| **API rate limits** | Audits may fail during high usage periods | Implement request queuing, retry logic, and caching |
| **Claude API costs** | Costs may exceed budget if usage spikes | Set monthly usage alerts, implement per-user limits |
| **Website blocking** | Some websites may block Puppeteer/headless browsers | Use stealth plugins, rotate user agents, provide manual override |
| **User adoption** | Sales team may resist changing existing workflow | Comprehensive training, champion program, show ROI early |
| **Data accuracy** | AI analysis may occasionally provide incorrect recommendations | Add human review step, collect feedback, improve prompts |

# Approval & Sign-off

This Software Requirements Specification has been reviewed and approved by the following stakeholders:

| **Name** | **Role** | **Signature** | **Date** |
| --- | --- | --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | VP of Sales | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CTO | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Project Manager | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | CFO | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_ |

**Document Revision History**

| **Version** | **Date** | **Author** | **Changes** |
| --- | --- | --- | --- |
| 1.0 | 10/11/2025 | Product Team | Initial document creation |