Simple Project Resource Manager - Implementation Progress Report

Generated: August 29, 2025

Project Overview

JavaFX desktop application for field service scheduling, replacing Excel-based workflow with integrated project and resource management capabilities.

☑ Completed Features

Core Functionality

- **Timeline View:** Interactive calendar with drag-drop project/assignment management, visual project bars with tooltips showing project details and open items count
- **Resource Management:** Complete CRUD operations for resources with availability tracking, PTO/sick day management
- **Project Management:** Full project lifecycle with status tracking, travel field support, client contact information
- **Assignment System:** Resource allocation with conflict detection, travel time calculation
- **Database:** SQLite with HikariCP connection pooling, automatic schema migration support

Reports Module

- **Revenue/Budget Report:** Financial overview with date filtering and export capabilities
- **Resource Utilization Report:** Availability and assignment tracking with utilization percentages
- **Project Status Report:** Comprehensive project metrics including timeline and budget status
- **Assignment Report:** Detailed assignment tracking with resource allocation overview
- **Workload Report:** Resource capacity analysis with workload distribution metrics

Financial Tracking System (Phase 1 Complete)

- **Purchase Orders:** Full lifecycle tracking (Draft → Pending → Approved → Ordered → Received → Paid)

- **Actual Costs:** Cost tracking with PO linking and variance analysis
- **Change Orders:** Complete approval workflow with impact analysis
- **Budget Management:** Category-based budget breakdown with cost categorization
- **Financial Summary:** Comprehensive financial reporting with CSV/Excel export options
- **Quick Entry:** Batch cost entry for rapid data input

Open Items Module (Phase 3 Complete)

- **Grid View:** Tabular display with sorting, filtering, and bulk operations
- **Kanban Board:** Visual workflow with drag-and-drop status updates across 6 status columns
- **Item Management:** Full CRUD operations with priority, health status, and progress tracking
- **Categories & Tags:** Industrial automation-specific categories with autocomplete ComboBoxes
- **Data Persistence:** Robust database storage with proper null handling and cache synchronization
- **Timeline Integration:** Open items count displayed in project tooltips

Additional Completed Features

- **Conflict Detection:** Resource double-booking prevention with travel time consideration
- **Skill Management:** Resource skills and certifications tracking
- **Project Templates:** Quick project creation from predefined templates
- **Bulk Operations:** Batch delete for projects, multi-resource assignment capabilities
- **Data Import/Export:** Excel import for projects and resources
- **Search & Filter:** Advanced search across projects, resources, and assignments

🚧 In Progress / Pending Features

Phase 2 - Financial Timeline (Not Started)

- **Visual Cost Tracking:** Cost visualization over project timeline
- **Budget Burn Rate:** Graphical representation of budget consumption
- **Cost Forecasting:** Predictive analytics based on current spending trends
- **Milestone-based Billing:** Payment tracking tied to project milestones

Phase 3 - Accounting Integration (Not Started)

- **Sage Accounting Export:** Direct integration with Sage accounting system
- **QuickBooks IIF Export:** IIF format export for QuickBooks compatibility
- **Invoice Generation:** Automated invoice creation from project data
- **Payment Tracking:** Customer payment status and AR management

SharePoint/Teams Integration (Partially Complete)

- **Calendar Sync:** ✘ Not implemented - Microsoft Graph API integration pending
- **Document Management:** ✘ Not implemented - SharePoint document library integration
- **Teams Notifications:** ✘ Not implemented - Real-time notifications to Teams channels
- **LDAP Authentication:** ✘ Not implemented - Active Directory integration

Advanced Reporting (Not Started)

- **Geographic Distribution Report:** Map visualization of project locations
- **Completion Analytics:** Performance metrics with trend analysis
- **Custom Report Builder:** User-defined report creation interface
- **Dashboard Widgets:** Customizable KPI widgets for executive view

Mobile/Web Access (Not Started)

- **REST API Development:** Backend API for remote access
- **Web Interface:** Browser-based access to core functionality
- **Mobile Application:** iOS/Android apps for field personnel
- **Offline Sync:** Data synchronization for disconnected operation

📊 Implementation Statistics

Completion by Module

- Core System: **100%** Complete
- Financial Tracking: **Phase 1 (100%)** | Phase 2 (0%) | Phase 3 (0%)
- Open Items: **100%** Complete
- Reports: **80%** Complete (5 of 6+ reports implemented)
- Integration: **10%** Complete (Basic export only)

- Advanced Features: **30%** Complete

Overall Project Status

- **Estimated Completion:** 65-70% of total planned features
- **Production Ready:** Yes, for core functionality
- **Key Gaps:** External integrations (SharePoint, Accounting systems)

🎯 Recommended Next Steps

1. **Priority 1 - Integration Completion**

   - Implement Microsoft Graph API for SharePoint/Teams integration
   - Complete accounting system export functionality

2. **Priority 2 - Financial Phase 2**

   - Develop visual timeline for cost tracking
   - Implement budget forecasting algorithms

3. **Priority 3 - Reporting Enhancement**

   - Add geographic distribution report with mapping
   - Create custom report builder interface

4. **Priority 4 - Mobile/Web Access**

   - Design and implement REST API
   - Develop responsive web interface

💡 Technical Achievements

Performance Optimizations

- **Database Connection Pooling:** HikariCP implementation for efficient connection management
- **Cache Management:** In-memory caching for frequently accessed data
- **Lazy Loading:** Efficient data loading strategies for large datasets

Code Quality

- **Architecture:** Clean MVC pattern with service layer separation
- **Testing:** Comprehensive test coverage for critical business logic
- **Documentation:** Inline code documentation and user guides

User Experience

- **Drag-and-Drop:** Intuitive interfaces for timeline and kanban operations
- **Auto-Complete:** Smart input assistance for data entry
- **Visual Feedback:** Clear status indicators and progress visualization

📝 Known Issues & Limitations

- **SharePoint Sync:** Not operational - requires Microsoft 365 configuration
- **Multi-user Concurrency:** Limited testing in multi-user scenarios
- **Large Dataset Performance:** Timeline may slow with 500+ concurrent projects
- **Report Customization:** Limited to predefined report formats

✅ Recent Accomplishments (Last Session)

- **Fixed Open Items Persistence:** Resolved critical bug preventing items from saving/loading correctly
- **Implemented Kanban Drag-Drop:** Full drag-and-drop functionality across all status columns
- **Enhanced UI Visibility:** Fixed text rendering issues in Kanban cards
- **Added Industrial Categories:** Implemented domain-specific categories for industrial automation
- **Improved Data Validation:** Added robust null handling throughout the application

This report represents the current state of the Simple Project Resource Manager implementation as of August 29, 2025.