Supplier Statement Reconciliation System

JLL

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PREPARED BY	**PROJECT TYPE**
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Product Requirements Document

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Executive Summary

The Supplier Statement Reconciliation System is a web-based application designed to automate and streamline the reconciliation process between supplier statements and our database. This tool addresses critical pain points in Suppliers operations by providing real-time visibility into invoice payment statuses.

> **CRITICAL SECURITY NOTE:** This system will ONLY READ from existing databases - no data modification, insertion, or deletion will occur. All existing JLL systems and data will remain completely unaffected.

The system uses a simple web UI for file upload and supplier ID input/dropdown selection. The system maintains minimal audit logs of processing history (timestamp, user, supplier, files processed) but does not store invoice data or reconciliation results.

Project Definition

Primary Business Problem

JLL's residential Suppliers Team currently performs manual reconciliation of supplier statements against our database. This manual process is error-prone, inconsistent, and creates a bottleneck that limits the team's ability to scale operations effectively.

Project Objective

Automate the supplier statement reconciliation process to reduce manual effort, improve accuracy, and ensure records always reflect the latest payment statuses and invoice information from the database.

Success Criteria

- **Efficiency Improvement:** Significant reduction in reconciliation time per supplier statement
- **Error Elimination:** Zero manual reconciliation errors
- **User Adoption:** Already in use locally by the Suppliers Team
- **Data Safety:** 100% read-only access to existing databases

Team Structure & Roles

Project Lead/Developer

Role: Sasha Karniyuk, Senior Client Accountant (Suppliers)

Project Responsibilities:
- Full-stack development (Flask, SQL, HTML/CSS)
- Database integration and query optimisation
- Security implementation and testing
- User training and documentation
- Production deployment and maintenance

Stakeholders

- **Assaf** - Database owner
- **JLLT** - Technical review and security validation
- **Line Manager - Anthony Lee** - Accounts approval (granted)
- **Azure Cloud Team** - Infrastructure deployment and cloud platform support

Primary Users

- **Suppliers Team** - Daily users of the reconciliation system
- **Residential Accounts Team** - Occasional users of the reconciliation system
- **Property Management Team Leaders/Property Managers** - May be granted access initially for invoice status verification; wider property management team adoption possible in future phases

Support/Advisory

- **JLL Database Team** - Database access and connection support
- **JLL Security Team** - Security review and compliance validation
- **Azure Cloud Team** - Cloud infrastructure deployment and configuration

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User Benefits & Personas

Primary Users

Suppliers Team

Role: Daily reconciliation of supplier statements

Current Pain Points:
- Manual cross-referencing is time-consuming per statement
- Inconsistent handling of invoice statuses
- No centralised view of payment statuses

Benefits:
- Significant time reduction in reconciliation process
- Automated status classification and reporting
- Professional, consistent communication with suppliers

Secondary Users

Residential Accounts Team

Role: Supporting Suppliers Team

Benefits:
- Standardised reconciliation procedures
- Complete audit trail for compliance
- Improved supplier relationship management

Property Manager

Role: Invoice approval and status management

Current Pain Points:
- Manual tracking of invoice approval status
- Time-consuming supplier communication
- RADAR not very clear on invoice status

Benefits:
- Real-time visibility into invoice approval status
- Automated communication of status changes
- Reduced supplier support requests
- Complete clarity on invoice status

Business Benefits

Quantitative Benefits

- **Time Savings:** Significant reduction in reconciliation time per statement
- **Error Reduction:** 100% elimination of manual reconciliation errors
- **Operational Efficiency:** Process significantly more supplier reconciliations per day
- **Cost Savings:** Significant annual savings in staff time

Qualitative Benefits

- **Improved Supplier Relations:** Faster response times and professional communication
- **Enhanced Compliance:** Standardised procedures and complete audit trails
- **Better Decision Making:** Real-time visibility into payment statuses
- **Reduced Stress:** Elimination of manual, error-prone processes

Current State Analysis

Manual Process (Current)

1. **File Processing:** Manual download and review of supplier CSV statements
2. **Data Cross-Reference:** Manual VLOOKUP or manual checking against internal systems
3. **Status Classification:** Manual determination of payment status for each invoice
4. **Report Generation:** Manual Excel compilation with status updates
5. **Communication:** Manual email correspondence with suppliers
6. **Documentation:** Inconsistent record-keeping of reconciliation activities

Current Pain Points

- **Time Investment:** Time-consuming process per supplier statement
- **Error Prone:** Manual processes lead to inconsistencies and mistakes
- **Limited Scalability:** Cannot handle increased supplier volume efficiently
- **Poor Supplier Experience:** Delayed responses and inconsistent communication
- **Compliance Risk:** Inconsistent documentation and audit trails

Target Outcome

Automated Process

1. **File Upload:** Simple web interface for CSV file upload
2. **Automated Processing:** Instant reconciliation against database
3. **Status Classification:** Automated status determination with detailed notes
4. **Report Generation:** Instant Excel report with supplier-specific formatting
5. **Professional Communication:** Standardised status explanations
6. **Audit Trail:** Complete logging of all processing activities

Expected Improvements

- **Speed:** Significant improvement in processing efficiency
- **Accuracy:** 100% elimination of manual errors
- **Consistency:** Standardised status classification across all suppliers
- **Scalability:** Handle unlimited supplier volume efficiently

- **Compliance:** Complete audit trail and standardized procedures

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Technical Architecture

Application Stack

- **Backend:** Flask (Python) web framework
- **Database:** SQL Server (read-only access to existing APR database)
- **Frontend:** HTML/CSS with JLL branding
- **Security:** Environment variables, input validation, audit logging
- **Deployment:** Local development + Azure cloud capability

Database Integration

- **Access Method:** Read-only SELECT queries only
- **Database:** CML_PROD_RadarJLLaccts (APR) database
- **Authentication:** Windows Authentication (local) / SQL Authentication (Azure)
- **Security:** Azure Key Vault for credential management
- **Performance:** Optimised queries with no impact on existing operations

Security Implementation

- **Input Validation:** Comprehensive validation and sanitisation
- **File Security:** Secure file handling with size and type restrictions
- **Database Security:** Read-only access with parameterised queries
- **Audit Logging:** Complete activity tracking for compliance
- **Environment Security:** No hardcoded credentials, environment-based configuration

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Business Requirements

Functional Requirements

Data Processing

- Accept CSV files from suppliers containing invoice data
- Query multiple database tables for comprehensive invoice information

- Handle various invoice statuses and payment scenarios
- Validate file format and content before processing

Status Classification

- Identify invoices as: Pending Full Payment, Part-paid, Paid, Cancelled
- Track approval status: Pending Approval, Approved, Rejected
- Provide detailed notes for each status category
- Include payment history with transaction dates and amounts

Report Generation

- Generate Excel files with supplier name and date stamp
- Include payment status, notes, and transaction details
- Maintain data integrity and formatting consistency
- Provide professional, supplier-ready reports

System Integration

- Connect to existing SQL Server database
- Support both Windows Authentication and SQL Authentication
- Maintain compatibility with current JLL systems
- Ensure zero impact on existing database operations

Non-Functional Requirements

Reliability

- Error handling for invalid file formats
- Graceful handling of database connection issues
- Data validation and integrity checks
- Comprehensive error logging and reporting

Security

- Environment variable configuration for sensitive data
- Secure file handling and temporary storage
- Database connection security
- Input validation and sanitisation

Scalability

- Support for Azure deployment

- Modular architecture for future enhancements

- Configurable database connections

- Each reconciliation request is processed independently, with no reliance on server-side session state, enabling the system to scale out easily across multiple servers if needed

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Success Metrics

Quantitative Metrics

- **Processing Efficiency:** Significant improvement in processing efficiency per statement

- **Error Rate:** Achieve 0% manual reconciliation errors

- **User Adoption:** 100% adoption by Suppliers Team

- **Throughput:** Process significantly more supplier reconciliations per day

Qualitative Metrics

- **User Satisfaction:** Positive feedback from Accounts/PM Team

- **Supplier Relations:** Reduced support requests and improved communication

- **Compliance:** Complete audit trail and standardised procedures

- **Operational Efficiency:** Reduced stress and improved team productivity

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Risk Assessment & Mitigation

Technical Risks

- **Database Performance Impact:** Mitigated by read-only access and optimised queries

- **Security Vulnerabilities:** Mitigated by comprehensive input validation and audit logging

- **Integration Issues:** Mitigated by thorough testing and gradual rollout

Business Risks

- **User Resistance:** Mitigated by user training and demonstrating immediate benefits

- **Data Accuracy:** Mitigated by extensive testing and validation procedures

- **Compliance Issues:** Mitigated by complete audit trails and standardised procedures

Operational Risks

- **System Downtime:** Mitigated by robust error handling and graceful degradation
- **Data Loss:** Mitigated by read-only access and no data modification
- **Performance Issues:** Mitigated by optimised queries and efficient processing

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Future Enhancements

First Update: Persistent Status Tracking Database

Action: Implementing a persistent database to track invoice statuses across multiple states and provide real-time status checking capabilities.

Current Limitation

The MVP system processes supplier statements on-demand without maintaining historical status data. While this approach ensures data safety and simplicity, it limits the system's ability to provide comprehensive status tracking across multiple invoice states.

Proposed Enhancement

- **Persistent Status Database:** Create a dedicated database table to store invoice status history
- **Real-time Status Tracking:** Maintain current and historical status information for all processed invoices
- **Status Change Monitoring:** Track status transitions (Pending → Approved → Paid, etc.)
- **Audit Trail Enhancement:** Complete history of status changes with timestamps and user actions
- **Performance Optimisation:** Reduce database queries by caching frequently accessed status information

Benefits

- **Enhanced Visibility:** Real-time status checking across all invoice states
- **Improved Efficiency:** Faster reconciliation by leveraging cached status data
- **Better Reporting:** Historical status analysis and trend reporting
- **Supplier Self-Service:** Potential for supplier portal with real-time status updates
- **Compliance Enhancement:** Complete audit trail of all status changes

Implementation Considerations

- **Data Synchronisation:** Ensure status database remains current with main APR database
- **Storage Requirements:** Plan for growth as status history accumulates
- **Performance Impact:** Optimise queries to maintain system responsiveness
- **Security:** Maintain same security standards as main database access

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Conclusion

The Supplier Statement Reconciliation System represents a significant opportunity to improve JLL's Suppliers operations through automation and standardisation. The MVP approach ensures immediate business value while maintaining complete data safety and security.

The proposed solution addresses all identified pain points while providing a foundation for future enhancements. With significant improvement in processing efficiency and complete elimination of manual errors, this system will deliver substantial value while improving supplier relations and compliance.

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Next Review: Upon stakeholder approval