**Tender Insight Hub - Project Leadership Report**

**Course: NSED742 - Software Engineering & Design  
Project: Tender Insight Hub - SaaS Platform for SME Procurement  
Team Lead: Ashwil Herman  
Date: October 2025**

**Project Overview**

**The Tender Insight Hub is a cloud-native SaaS platform designed to assist South African SMEs in navigating public procurement opportunities. The system provides AI-powered tender analysis, readiness scoring, and workspace management capabilities.**

**Team Structure & Responsibilities**

**Project Lead: Ashwil Herman**

* **Overall system architecture and technical direction**
* **Backend API development with FastAPI**
* **Database design and integration**
* **Authentication and multi-tenant architecture**
* **Final system integration and quality assurance**

**Development Team**

**Frontend Development:**

* **Khethiwe Skhosana - UI/UX design and user interface implementation**
* **Koketso Kgogo - Component development and user experience**

**Backend Development:**

* **Snethemba Mthembu - API endpoints and business logic**
* **Onthatile Kilelo - AI integration and data processing**

**Technical Implementation**

**System Architecture**

* **Backend Framework: FastAPI with RESTful endpoints**
* **Frontend: Vanilla JavaScript with component-based architecture**
* **Databases: PostgreSQL (SQL) + MongoDB (NoSQL)**
* **Authentication: JWT-based with team isolation**
* **AI Integration: Document summarization and analysis**

**Key Features Delivered**

1. **Multi-tenant SaaS Platform with team-based workspaces**
2. **Tender Search & Filtering with advanced criteria**
3. **AI Document Analysis for tender summarization**
4. **Readiness Scoring System for suitability assessment**
5. **Workspace Management for tender tracking**
6. **Public API Endpoints for external integration**

**Project Management Approach**

**The project followed agile development principles with:**

* **Regular team coordination meetings**
* **Modular feature development**
* **Continuous integration and testing**
* **Comprehensive documentation**

**Technical Challenges & Solutions**

**Authentication & Data Isolation**

**Implemented JWT-based authentication with team context validation to ensure secure data isolation between different organizations.**

**AI Service Integration**

**Developed a multi-layer fallback system that provides realistic demo data when external AI services are unavailable, ensuring system reliability.**

**Database Architecture**

**Utilized both SQL and NoSQL databases to efficiently handle structured application data and unstructured AI analysis results.**

**Learning Outcomes**

**Technical Skills**

* **Full-stack development with modern frameworks**
* **Cloud architecture and SaaS principles**
* **AI and machine learning integration**
* **Multi-database system design**

**Leadership Development**

* **Project planning and team coordination**
* **Technical architecture design**
* **Quality assurance processes**
* **Stakeholder communication**

**Conclusion**

**The Tender Insight Hub successfully demonstrates the implementation of a production-ready SaaS platform addressing real-world procurement challenges. The project showcases effective team collaboration, robust technical architecture, and practical AI integration.**

**Team Members:**

* **Ashwil Herman - Project Lead & Backend Architecture**
* **Khethiwe Skhosana - Frontend Development & UI/UX**
* **Koketso Kgogo - Frontend Components & User Experience**
* **Snethemba Mthembu - Backend API & Business Logic**
* **Onthatile Kilelo - AI Integration & Data Processing**