



Faculty of Sciences of
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Computer Science
Department

End of Studies Project Report

For the obtention of a National Engineering Diploma

Track: Software Engineering and Data Engineering

Title:

PLAN GENIE AI

Intelligent Task & Event Management Platform

Powered by Advanced NLP and Speech Recognition

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Realised within SFM



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Dedication

*To my family and mentors,
whose support made this possible.*

— *Yassine Jedidi*

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Introduction

In today's busy world, managing tasks and events effectively is very important for both personal and work productivity. Traditional ways of managing tasks and events are often slow, make mistakes, and don't adapt to what users prefer.

This project introduces **Plan Genie AI**, a smart task and event management platform that uses artificial intelligence to change how people and organizations plan, organize, and track their activities. The system uses Natural Language Processing (NLP), speech recognition, and data analysis to provide a smooth, intelligent, and easy-to-use experience.

Main Goals:

- Build an AI platform that can understand and process natural language for creating tasks and planning events
- Add speech-to-text features to allow voice-based task and event management
- Provide performance analytics and visualization tools
- Ensure data security and privacy protection
- Make a responsive application that works on different devices

The project uses modern technologies including React.js for the frontend, Node.js and Python FastAPI for backend services, PostgreSQL for data storage, and Hugging Face Transformers for advanced NLP features. The system can process multiple languages, extract information automatically, and provide detailed performance analytics through interactive charts.

This report shows the complete development process of Plan Genie AI, from initial idea and requirements through design, building, testing, and deployment. It demonstrates how artificial intelligence can be used to solve real productivity problems while maintaining good user experience and data security.

1 General Framework and Preliminary Study

Introduction

The modern workplace and personal life demand efficient management of tasks and events. Traditional task management systems often fall short due to their rigid interfaces, limited automation capabilities, and lack of intelligent features. This chapter provides a comprehensive analysis of the project context, problem statement, and requirements for the Plan Genie AI platform.

1.1 Host Organization: SFM Technologies

1.1.1 General Overview

Founded in 1995, **SFM Technologies** is a Tunisian consulting and engineering firm specializing in telecommunications, ICT, and digital transformation services. The company is part of the larger SFM Group, which includes subsidiaries such as SFM International, SFM Telecom, and SFM Cameroun. SFM operates in Africa, Europe, Asia, Oceania, and the United States.

1.1.2 Core Competencies

SFM Technologies provides a wide array of services in the following areas:

- **Telecommunications and Regulatory Support:** Benchmarking, audits, QoS/QoE analysis, and network planning for regulators and operators.
- **Strategic Engineering and Advisory:** Consulting on network convergence, privatization, spectrum regulation, and technology migration (e.g., analog to digital TV).
- **Training and Capacity Building:** Technical and theoretical training sessions in ICT and telecoms for institutions and companies.
- **R&D and Software Development:** Through its R&D branch, SFM Lab, the company creates custom software for fraud detection, tariff simulation, AI analytics, and network performance monitoring.

1.1.3 Digital Tools and Platforms

SFM Technologies develops and maintains several proprietary platforms:

- Robotic Process Automation (e.g., COSAP, Ticketeazy, IT&M)
- Cybersecurity Solutions (e.g., WiFi portal, PKI, SOC)
- AI and Big Data platforms for telecom, banking, and government sectors
- Modular software solutions tailored to specific client needs

1.1.4 Clientele and Global Reach

With a portfolio of over 30 clients, including national regulators, ministries, and international organizations such as the World Bank and African Development Bank, SFM Technologies has established itself as a trusted partner across several continents.

1.1.5 Summary Table

Founded	1995
Legal Form	SARL (R.C. 1028016M)
Headquarters	Tunis, Tunisia
Core Areas	Telecom regulation, digital transformation, ICT consulting and training
R&D Division	SFM Lab
Operational Presence	Africa, Europe, Asia, Oceania, USA
Main Offerings	Consulting, audits, custom platforms, cybersecurity, AI solutions
Clients	Telecom operators, regulators, ministries, international donors

Table 1: Summary of SFM Technologies’ Key Information

1.2 Project Context and Problem Statement

1.2.1 Current State of Task and Event Management

In today’s fast-paced digital environment, individuals and organizations face significant challenges in effectively managing their tasks and events. Traditional task management approaches often rely on manual processes, static interfaces, and limited automation capabilities, leading to several critical issues:

- **Time-Consuming Manual Entry:** Users must manually input task details, deadlines, and event information, which is both time-consuming and prone to human error.
- **Limited Natural Language Understanding:** Most existing systems require users to follow rigid input formats, failing to understand natural language expressions like "meeting with Mohammed tomorrow at 3 PM" or "deadline for project report next Friday."
- **Lack of Intelligent Automation:** Current solutions lack the ability to automatically categorize tasks based on priority and provide intelligent reminders.
- **Poor User Experience:** Complex interfaces and limited features reduce productivity gains and fail to track the progress of tasks.
- **Insufficient Integration:** The absence of integration with a calendar to manage events.
- **No Voice-Based Interaction:** The absence of speech recognition capabilities restricts accessibility and convenience for users who prefer voice-based interaction.

1.2.2 Problem Statement

The core problem addressed by Plan Genie AI is the lack of an intelligent, user-friendly platform that seamlessly combines natural language processing, speech recognition, and advanced analytics to provide a comprehensive task and event management solution. The current market landscape reveals several critical gaps that this project aims to address:

1. **Natural Language Processing Gap:** Existing task management systems fail to understand and process natural language input effectively. Users must adapt to rigid input formats instead of expressing their needs naturally, leading to poor user experience and reduced motivation.

2. **Speech Recognition Deficiency:** Current platforms lack voice-based interaction capabilities, limiting accessibility and convenience for users who prefer or require voice commands. This creates barriers for users with disabilities and those who need hands-free operation.
3. **Intelligent Automation Absence:** Most existing solutions lack AI-powered features such as intelligent task prioritization, smart reminders, and comprehensive analytics for productivity optimization. Users must manually organize and prioritize their activities.
4. **Task-Event Integration Problem:** The market offers separate tools for task management and event scheduling, creating workflow inefficiencies. Users must switch between multiple applications to manage their complete schedule.
5. **Analytics and Insights Limitation:** Current tools provide basic task lists without meaningful insights into productivity patterns. Users lack data-driven guidance to optimize their time management and improve efficiency.
6. **Cross-Platform Accessibility Issues:** Many solutions are platform-specific or lack responsive design, preventing consistent user experience across different devices and operating systems.

Primary Research Question

How can artificial intelligence, specifically natural language processing and speech recognition technologies, be leveraged to create an intelligent task and event management platform that addresses the limitations of existing solutions while providing enhanced user experience and productivity optimization?

Secondary Research Questions

- How can intelligent task prioritization algorithms leverage AI to automatically categorize and rank tasks based on context and user preferences?
- What architectural design ensures seamless integration between task management and event scheduling functionalities?
- How can data-driven analytics provide meaningful insights to help users optimize their productivity patterns?
- What database architecture best supports the storage and retrieval of complex task and event data with real-time synchronization?
- How can the platform maintain data security and privacy while providing intelligent features?
- How can cross-platform compatibility be achieved between web applications and mobile applications while maintaining consistent functionality?
- What notification and reminder systems are most effective for ensuring user engagement, task completion and event reminders?
- How can multilingual support be implemented to process text and voice inputs in multiple languages effectively?
- What data visualization techniques provide the most meaningful insights for performance tracking and productivity analysis?

1.2.3 Market Analysis and Gap Identification

The market for task and event management software is growing quickly as more people and businesses want better productivity tools. But most current tools are missing important features that Plan Genie AI provides.

Current Task and Event Management Solutions

- **Todoist:** Has natural language input, but no voice or event features.
- **Microsoft To Do:** Simple tasks, no AI, no voice, limited calendar link.
- **Google Calendar:** Great for events, weak for tasks, no smart input or voice.
- **Asana:** Good for teams, but complex and no voice or smart input.
- **Trello:** Visual boards, but no smart input, voice, or automation.
- **Notion:** Flexible, but hard to set up, no voice, limited smart input.
- **Apple Reminders:** Simple, but only for Apple, no smart input or voice.
- **Outlook Tasks:** Basic, no AI, no voice, limited smart input.

Feature Category	Current Market State	Plan Genie AI Advantage
Natural Language Processing	Limited or basic in most tools	Advanced NLP for complex task/event creation
Voice Interaction	Absent in most tools	Full speech-to-text and voice commands
Intelligent Automation	Minimal AI features	Smart categorization of tasks
Event-Task Platform	Separate tools for tasks and events	Unified platform with seamless management
Analytics & Insights	Basic or absent reporting	Comprehensive productivity analytics
Cross-Platform Accessibility	Platform-specific limitations	Web and Mobile applications

Table 2: Market Gap Analysis: Current Solutions vs. Plan Genie AI

Key Market Gaps Identified

Competitive Advantages of Plan Genie AI

1. **Unified Platform:** Unlike existing solutions that separate task and event management, Plan Genie AI provides a single, integrated platform for comprehensive activity management.
2. **Advanced AI Integration:** While some tools offer basic NLP, Plan Genie AI combines sophisticated natural language processing for a truly intelligent user experience.
3. **Voice-First Approach:** Unlike traditional task managers that rely only on text input, Plan Genie AI prioritizes voice interaction, making it more accessible and convenient.
4. **Intelligent Analytics:** Most existing tools provide basic task lists without meaningful insights. Plan Genie AI offers smart tasks prioritization to help users manage their time better.

1.3 Target Users

1.3.1 Target User Personas

Plan Genie AI is designed for individual users who want to transform their daily planning through intelligent AI-powered task and event management. The platform leverages advanced NLP, speech recognition to help users efficiently manage their personal productivity.

Primary User Personas

1. Busy Professionals and Knowledge Workers

- **Demographics:** Professionals ages 25-50 across various industries (consulting, design, writing, research, tech)
- **Key Characteristics:** High workload, need for efficient task management, value AI-powered automation
- **Pain Points:** Time-consuming manual task entry, difficulty prioritizing tasks, lack of productivity insights
- **Primary Needs:** Quick voice/text input, AI-powered task prioritization, automatic categorization, performance analytics

2. Students and Academic Professionals

- **Demographics:** University students, researchers, professors, ages 18-65
- **Key Characteristics:** Academic schedules, research deadlines, need for study time optimization
- **Pain Points:** Managing coursework deadlines, balancing multiple assignments, tracking study progress
- **Primary Needs:** Natural language task creation, automatic deadline extraction, study time tracking, academic calendar integration

3. Small Business Owners and Freelancers

- **Demographics:** Entrepreneurs, freelancers, small business owners, ages 25-50
- **Key Characteristics:** Wearing multiple hats, need for efficiency, managing both business and personal tasks
- **Pain Points:** Juggling multiple responsibilities, tracking billable hours, managing client deadlines
- **Primary Needs:** Voice-based quick task entry, automatic task categorization, time tracking, productivity insights

4. Individuals Seeking AI-Powered Productivity

- **Demographics:** Tech-savvy individuals, ages 20-60, interested in AI and automation
- **Key Characteristics:** Early adopters of technology, value intelligent automation, want data-driven insights
- **Pain Points:** Inefficient traditional task management, lack of intelligent prioritization, no productivity analytics

- **Primary Needs:** AI-powered task prioritization, intelligent categorization, performance tracking, data visualization

5. Users with Accessibility Needs

- **Demographics:** Users with visual, motor, or cognitive disabilities, all ages
- **Key Characteristics:** Need for voice-first interaction, alternative input methods, simplified interfaces
- **Pain Points:** Limited accessibility in existing tools, complex interfaces, lack of voice support
- **Primary Needs:** Voice-based task creation, speech-to-text conversion, screen reader compatibility, simplified UI

Secondary User Personas

1. Remote Workers

- **Characteristics:** Work from various locations, need for mobile-first solutions, cross-platform access
- **Needs:** Voice input for hands-free operation, cross-platform synchronization

2. Multilingual Users

- **Characteristics:** Work in multiple languages, need for language flexibility
- **Needs:** Multilingual text and voice processing, language-specific task categorization

3. Productivity Enthusiasts

- **Characteristics:** Focus on personal development, track productivity metrics, value data insights
- **Needs:** Detailed performance analytics, time distribution analysis, productivity optimization suggestions