University of Manouba National school of computer sciences

Design and Development Project Report

PCD/2425/65

Topic : Generative AI in the Service of Enterprise Architecture

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General Introduction

The emergence of Artificial Intelligence (AI) has profoundly transformed how we address complex challenges across various sectors, particularly in enterprise architecture. While this discipline has historically relied on rigorous methodologies and specialized tools, it now faces new challenges due to the increasing complexity of information systems and the demand for rapid, informed decision-making.

In this context, generative AI represents a technological breakthrough, opening new horizons in automation, modeling, and optimization. Its ability to generate contextually relevant content from simple text prompts enables experts to create visual representations aligned with industry standards such as TOGAF, ArchiMate, or PlantUML.

The project presented in this report aligns with this innovative momentum. It aims to extend an existing platform based on the GPT model, initially designed to provide textual recommendations in enterprise architecture. The primary objective is to design and integrate a module capable of automatically generating ArchiMate diagrams from text queries, leveraging PlantUML for graphical visualization.

This initiative offers dual value: it significantly simplifies architects’ work by reducing manual modeling tasks and makes enterprise architecture practices more accessible, particularly to non-technical profiles. Ultimately, this project represents a significant step toward a more agile, intelligent, and future-oriented enterprise architecture.

Chapter 1: Project Framework

Introduction

This chapter provides an overview of the project’s organizational context, the host organization (EAEXPERTISE), the core problem, and the proposed solution. It concludes with the adopted methodology.

1.1 Professional and Academic Context

This project is part of the curriculum at the National School of Computer Science (ENSI), specifically the Final Year Project (PCD). It was conducted in collaboration with the startup EAEXPERTISE, which provided supervision as the host organization.

1.2 Presentation of the Host Organization

EAEXPERTISE is a startup specializing in developing and deploying AI-based solutions. Its mission is to make AI accessible to all while adhering to ethical principles, data confidentiality, and seamless integration into corporate processes and tools. Founded in 2020, the company focuses on delivering reliable, user-centric AI projects aligned with ethical guidelines.

1.3 Problem Statement and Assigned Work

1.3.1 Problem Statement

Designing a high-performance enterprise architecture is a complex task requiring strict analysis of business needs, strategic goals, and technical constraints. This complexity intensifies with the rapid evolution of digital technologies and the diversification of information systems, making modeling processes lengthy, tedious, and often reserved for experts in frameworks like TOGAF or ArchiMate.

1.3.2 Assigned Work

The project aims to enhance an existing generative AI solution for enterprise architecture. Specifically, it builds on an existing GPT-based conversational agent (GPT Enterprise Architect Advisor) capable of proposing architectural solutions from natural language queries. The primary goal is to implement an automatic ArchiMate diagram generation module using PlantUML.

1.4 Proposed Solution

Generative AI can play a decisive role in automating the complex activity of enterprise architecture design. This will be achieved through an intelligent organizational platform that interprets natural language needs and automatically generates ArchiMate diagrams via PlantUML. The solution leverages the coherence between textual inputs, ArchiMate layers (Motivation, Business, Application, etc.), and established modeling best practices.

1.5 Objectives of the Final Year Project

* Develop a generative AI solution for automatic ArchiMate diagram creation from text queries, adhering to TOGAF and ArchiMate standards.
* Integrate PlantUML as a rendering engine to transform GPT-generated responses into actionable diagrams.
* Ensure system performance, security, maintainability, and scalability for a reliable user experience.

**1.6 Adopted Methodology: SCRUM**

The SCRUM methodology is an agile project management approach that emphasizes active collaboration and iterative software development. Rather than focusing on long-term detailed planning, SCRUM relies on the regular and frequent delivery of functional features through development cycles known as "sprints."

Each SCRUM project is structured into sprints—fixed periods of work, typically lasting two to four weeks—during which specific tasks are completed. At the beginning of each sprint, the team meets to define the objectives to be achieved and to create a detailed plan. Throughout the sprint, daily stand-up meetings are held to track progress, address potential obstacles, and make adjustments as needed.

At the end of each sprint, the developed features are presented for review, and feedback is collected to refine future work. This method is designed to be flexible, allowing for continuous adaptation to project changes and promoting ongoing communication within the team, which ultimately enhances the quality of the final product.

**Conclusion**  
In the first chapter of this report, we introduced the framework of our project by defining its key concepts. We also discussed the main challenges and objectives to address, as well as the guiding idea that shapes our work.