

CLINAPP: ARCHITECTURE OF AN EXPERT SYSTEM USING A CONVERSATIONAL AGENT FOR MEDICAL DATA COLLECTION

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Introduction

ClinApp is an expert system for organizing medical visits and collecting medical data directly from patients through the usage of questionnaires and a conversational agent. ClinApp targets three groups of users, a) the healthcare professionals, who can use the system to automate their patients' visits schedule and create questionnaires for data collection, b) the patients who utilize the system to organize their visits, receive medical instructions and record their medical data in advance and c) the administrative staff, who can receive analytics and feedback regarding the provided healthcare services. In this work the system's architecture is about to be presented at a conceptual level.

System architecture

The ClinApp system is broken down into three (3) main modules, which in turn include a number of subsystems. The modules are the following:

1. The *Platform Backend*, which performs most of the system's business logic, includes core services that implement the desired system functions in terms of access and data collection and various functions on them. The interaction with the rest of the system's modules takes place through various interfaces (APIs). Subsystem of this module is the *Business Intelligence* that processes and analyzes the aggregated data and provides various metrics, statistics and insights based on them.
2. The *Administration Applications* module, which contains all the graphical user interfaces (GUIs) for accessing the system services addressed to healthcare professionals and administrative staff.
3. The *Patient Application* module, which is used by patients to interact with the system. The *Conversational Agent* subsystem verbally interacts with the patient and collects all the needed medical information through voice and speech recognition.

An overview of the system's conceptual architecture is shown in Figure 1. The overall system, its modules and subsystems, are structured so that they can be described using the three-tier architecture, which is based on the client-server software architecture paradigm and is today the most common architecture of building information

systems, and consists of the a) Presentation layer, b) the Application layer and c) the Database layer.

At the *Presentation layer*, belong all the GUIs that concern the end-users, so it includes, either partially or completely, all modules and subsystems for which interaction with the end-user is required.

The *Application layer* applies the business logic of the system. In the ClinApp system, this level includes most parts of the Platform Backend module, and key parts of the Business Intelligence and the Conversational Agent subsystems.

Finally, the *Database layer* consists of the data stored and used by the system, as well as the necessary applications required for their storage and management.

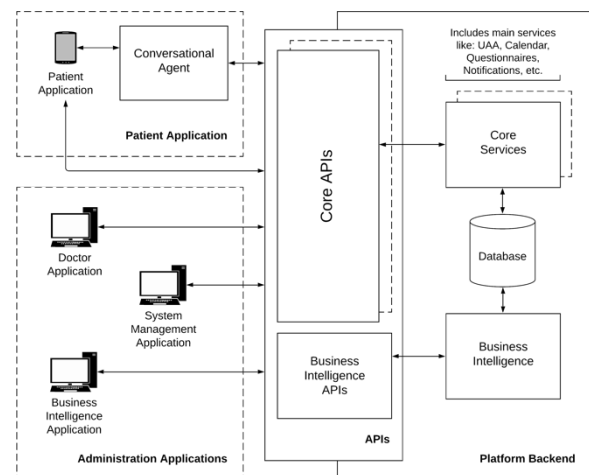


Figure 1. ClinApp system architecture

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Appointment Management, System Architecture, Medical Questionnaire, Conversational Agent

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