

# FUNCTIONAL REQUIREMENTS OF AN INTELLIGENT SYSTEM FOR ORGANIZING MEDICAL VISITS AND COLLECTING MEDICAL DATA: THE CASE OF CLINAPP PROJECT

E. Logaras\*, G. Petridis\*, A. Billis\*, P. Lagakis\*\*, K. Grigoriadis\*\*\*, I. Dimitriadis\*\*\*\*, A. Vakali\*\*\*\* and P. D. Bamidis\*

\* Lab of Medical Physics and Digital Innovation, School of Medicine, Aristotle University of Thessaloniki, Greece, \*\* Computer Center Lagakis, Drama, Greece, \*\*\* MLS Innovation SA, Thessaloniki, Greece, \*\*\*\* Data and Web Science Lab, Dept of Informatics, Aristotle University of Thessaloniki, Greece,

evanlogar@auth.gr, gpetridi@auth.gr, ampillis@med.auth.gr, paris@lagakis.gr, kgrigor@mls.gr, idimitriad@csd.auth.gr, avakali@csd.auth.gr, bamidis@auth.gr

## Introduction

Appointments in healthcare institutions are traditionally scheduled by secretariats via telephone. This method allows maximum possible adaptability, but is negatively affected by a variety of management factors, the main of which is the lack of specialized staff. Meanwhile, one of the modern challenges regarding patient data management systems is the ease of updating data. Physicians' limited time and patients' growing demands for better and cheaper services, lead to the adoption of innovative systems, where patients fill in as much data as possible before showing up to their appointment.

## Implementation

ClinApp is an under development intelligent system for organizing medical visits and collecting medical data faster and easier. The system will provide a plethora of tools through which patients: a) will schedule their appointments, b) will receive necessary information in order to be properly informed, c) will record needed medical information using a chatbot or through speech recognition using a conversational agent, d) will receive medical instructions after appointment's completion and finally, e) will evaluate the services they have received. The list of functional requirements is shown in Table 1.

Table 1: Functional requirements list

| No                                   | Functional requirement  |
|--------------------------------------|---|
| <i>System management application</i> |   |
| 1                                    | Ability to manage system's users and clinics.   |
| 2                                    | Ability to manage chatbot's questionnaires.   |
| 3                                    | Ability to manage preparation instructions.   |
| 4                                    | Ability to automatically prioritize patients, facilitating patient selection in case of re-appointment due to cancellation. |
| 5                                    | Ability to manage scheduled appointments.   |
| 6                                    | Ability to define evaluation questions.   |
| <i>Doctor application</i>            |   |

|  |  |
|--|--|
| 7  | View scheduled appointments, patient profiles and medical data.  |
| 8  | Ability to confirm completed appointments.   |
| 9  | Ability to send medical instructions after appointment's completion.   |
| <i>Patient application</i>               |  |
| 10                                       | Ability to select free, predefined time slots to schedule medical appointments.                              |
| 11                                       | Automated process to confirm the scheduled appointment in a predetermined time.                              |
| 12                                       | Ability to get preparation instructions for the upcoming appointment after the confirmation procedure.       |
| 13                                       | Ability to record necessary medical information with the use of a chatbot.                                   |
| 14                                       | Ability to receive medical advice and instructions after appointment's completion.                           |
| 15                                       | Ability to evaluate provided services through predefined questions.  |
| <i>Conversational agent application</i>  |  |
| 16                                       | Ability to record medical information through natural language recognition, using a smart virtual assistant. |
| 17                                       | Ability to repeat commands in case of not understanding the content of a voice command or phrase.            |
| <i>Business Intelligence application</i> |  |
| 18                                       | Ability to analyze key performance indicators provided by the services evaluation process.                   |

## Keywords:

Appointment Management, Medical Data Management, Chatbot, Medical Questionnaire, Conversational Agent

## Acknowledgement

This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (T2EDK-04937).