

New digital skills training approach to enhance life quality

Nova abordagem de treinamento de habilidades digitais para melhorar a qualidade de vida

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ABSTRACT

The article outlines the need for professional services and abilities in the healthcare sector. The Erasmus+ DIGI4ME project intends to offer digital skills trainings for healthcare professionals. An investigation of the Romanian health information system was directed in the view of the National Public Health Institute of Romania interviews with stakeholders. Based on the accidents which took place in clinics all around the world, a framework based on sensors is proposed to alleviate the issues which can show up. The testing of the framework was performed in a research center and the reports show the advancement of the monitored environmental boundaries. The software solution can help clinical experts to upgrade their digital abilities and trigger imaginative ideas to enhance the experience of their patients.

Keywords: healthcare, learning, electronic system, digital skills.

RESUMO

O artigo destaca a necessidade de serviços e habilidades profissionais no setor de saúde. O projeto Erasmus+ DIGI4ME pretende oferecer formação em competências digitais para profissionais de saúde. Uma investigação do sistema de informação de saúde romeno foi direcionada na opinião do Instituto Nacional de Saúde Pública da Romênia em entrevistas com as partes interessadas. Com base nos acidentes ocorridos em clínicas de todo o mundo, é proposta uma estrutura baseada em sensores para amenizar os problemas que podem surgir. O teste do framework foi realizado em um centro de pesquisa e os relatórios mostram o avanço dos limites ambientais monitorados. A solução de software pode ajudar especialistas clínicos a atualizar suas habilidades digitais e desencadear ideias imaginativas para aprimorar a experiência de seus pacientes.

Palavras-chave: saúde, aprendizagem, sistema eletrônico, habilidades digitais.

1 INTRODUCTION

The population shifts all through Europe, will build the interest for medical care services and will prompt more positions, including different needed abilities for experts from the healthcare area. The health sector employment will increase by 23% in 2025, reaching 34% in Romania (European Commission, 2022a). In addition, the abilities that health experts have are key viewpoints for the conveyance of good administrations to society.

The digital abilities of health care professionals are recognized to be significant at European Union (EU) level. As per World Economic Forum (World Economic Forum, 2022), the health area will take on technology by considering Internet of Things and associated gadgets, Big data investigation, artificial intelligence, text, image and voice processing. In this specific situation, a course of basic programming was delivered in 2020 through the Zoom web gathering application to health science students from Brazil and their opinions were positive (Fuente et al., 2021).

In Romania, medicine universities have in their educational programs a course of medical computing and biostatistics. Kungle et al. described the significance of including computer science in the training of public health professionals and they ought to know about the implications of Big Data for health (Kungle et al., 2016). The COVID-19 pandemic caused the appearance of opportunities to work from a distance and the digitalization of work processes was sped up. The most frequent abilities are active learning, inventiveness, originality, reasoning, client experience, technology usage, monitoring and control. In this specific circumstance, the point of the DIGI4ME project is to further develop digital skills trainings in the medical services area. Educational establishments, health services affiliations, research institutes and enterprises will trade abilities and experiences. The availability to gain such abilities is offered via a training framework which aims to improve digital skill training all over Europe.

In the following section are outlined general remarks about the DIGI4ME project, alongside with a software framework which means to upgrade life quality in light of sensor utilization. Section 3 depicts the SWOT examination of the DIGI4ME project and the trial of the proposed framework. The last section traces the conclusions.

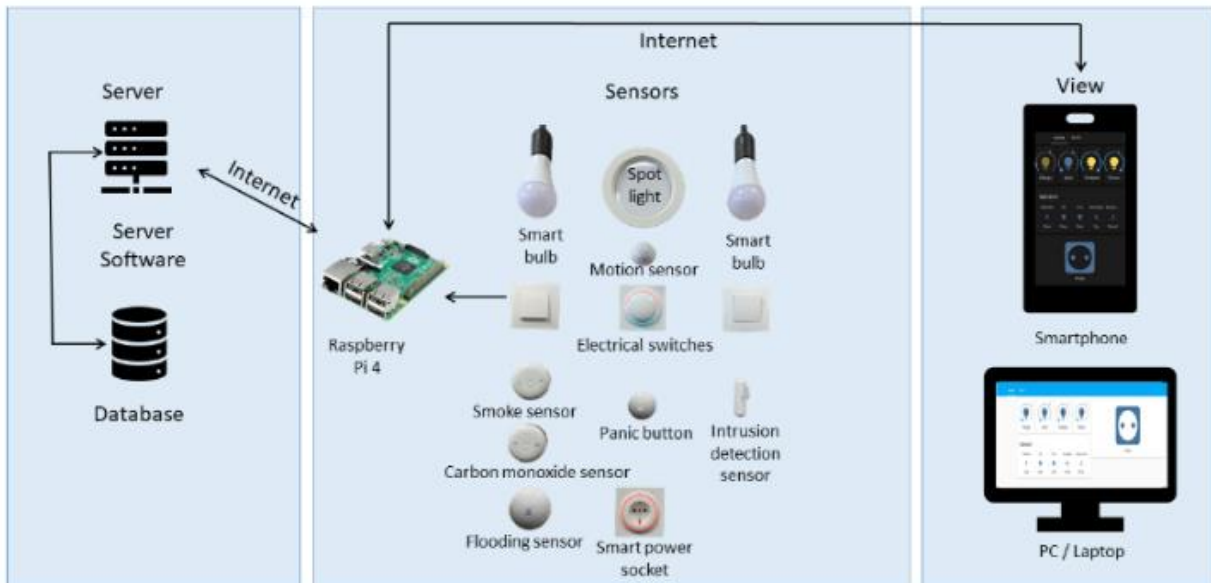
2 METHODOLOGY

Since the start of the DIGI4ME project, the instructive content will be made by deciding the digital abilities which each health expert ought to use. E-health solutions will be involved for them to reach their maximum limit after it is performed the check of the particular instructive requirements of specialists, administrators and experts of digital technology and medical imaging equipment.

Client adjusted training modules will be made on explicit setting in regards to digital image processing and organization, including continuous changes for educational scene of medical distance learning with the usage of innovative Vocational Open Online Courses (VOOCs) for digital abilities in the healthcare area. After the appraisal of the methodology's helpfulness through the pilot study, the quality of national and European Education on digital technologies in health sector will advance to the next stage.

An increment of oxygen level to up to 24% can prompt to a fire danger, as an account of the Piatra Neamț medical clinic, in Romania; or different locations such as Alexandria, Egypt; Chelyabinsk, Russia; Gaziantep, Turkey (European Commission, 2022b). In this specific situation, a framework to further develop life quality was made, in light of the fact that incidents can show up inside clinics. Because of this explanation, sensors should exist inside clinics to screen the climate, as well as patients ought to make use of emergency buttons. The high-level architecture of the system is illustrated in Figure 1.

Fig. 1 - High-level system architecture

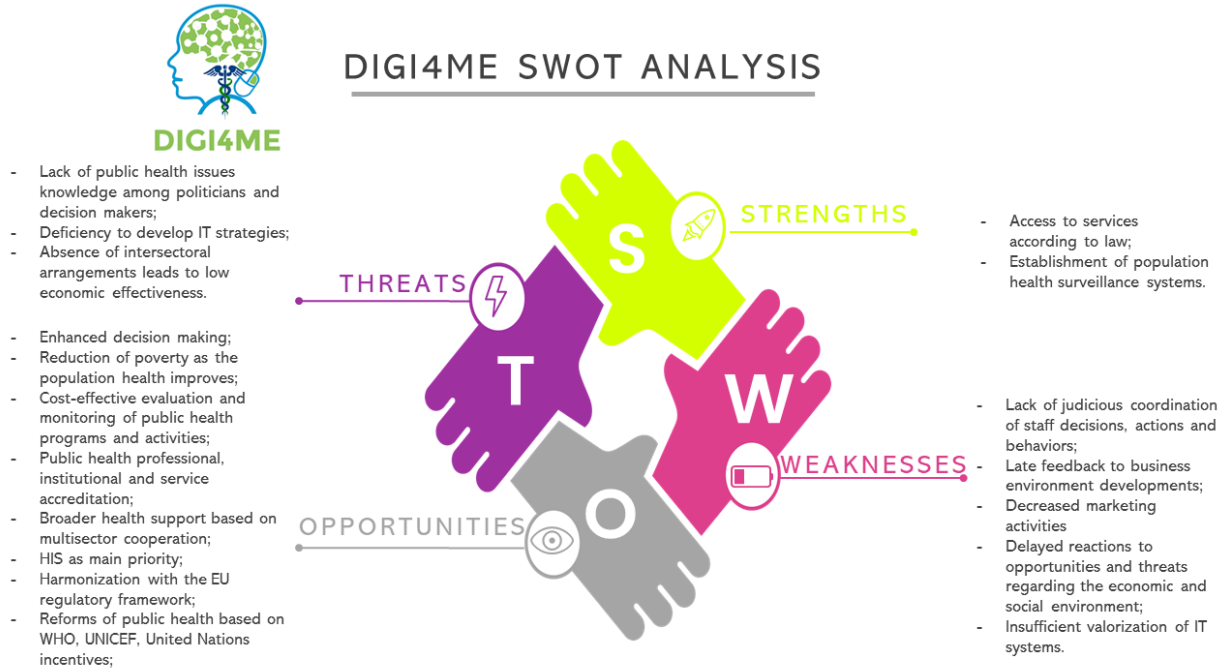


The system utilizes a few kinds of sensors, namely smart bulbs; spotlight; motion sensor; electrical switches; smoke, carbon monoxide and flooding sensors; panic button; intrusion detection sensor and smart power socket. The data from sensors are shipped off to the system’s gateway, a Raspberry Pi 4 embedded single board computer, via the Z-Wave and Zigbee communication protocols. The server software application safely persists user data, as well as data from his/her environment sensors. The user can access and manage the system via a framework which is accessible for smartphone, personal computer and laptop.

3 DATA ANALYSIS

An exhaustive Romanian Health Information System (HIS) appraisal was led in the view of the interviews that were coordinated by the National Public Health Institute of Romania with partners (Institutul Național de Sănătate Publică, 2021). Subsequent to examining the evaluation results, our perceptions are outlined in a strengths, weaknesses, opportunities, and threats (SWOT) analysis which are depicted in Figure 2.

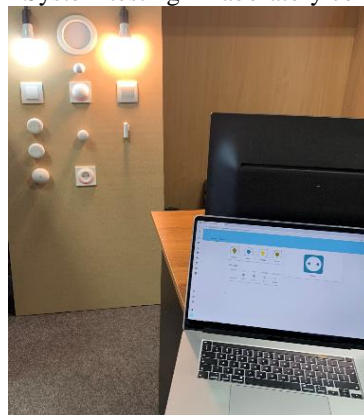
Fig. 2 - DIGI4ME SWOT analysis for Romania



In the short term, the Romanian HIS should extend the limit of data gathering, processing, assessment and reporting system in existent information frameworks, alongside the use of data and information in light of policies. Characterizations for clinical units with beds, outpatient suppliers, clinical research centers should to be utilized at national public level to associate distinctive data. In a short to medium term, Romanian HIS should urge adequate structures to make capable and proper IT solutions for checking the effects of public health programs.

The proposed framework was tested in research facility conditions, as in Figure 3.

Fig. 3 - System testing in laboratory conditions



smartphone. Further on, the framework will be evaluated and further developed in light of the input got from the project's patients and clinical staff.

4 CONCLUSIONS

The DIGI4ME Erasmus+ project will offer the created open-access training framework, likewise with its instructive help to the community of health care experts of the European Union. The partnership will seek towards the instructive framework to be used and incorporated in public and European Union level training systems in the medical services area. The proposed framework can be valuable in clinics, generally during pandemic times and can determine medical professionals to foster their digital abilities by utilizing and further developing it in light of their necessities.

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