

ICT IN A SOCIAL ORGANIZATION IN PANDEMIC TIMES

Sara Lidon¹ 
Leonilde Reis² 
Clara Silveira³ 

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Abstract: *Social organizations are faced with financial problems, but also in the areas of Information Systems and Information and Communication Technologies given their support for activities in providing services to citizens. The article presents the problem in the field of the design of a multidisciplinary prototype and information aggregator to support the management of the provision of services of a Social Organization. The research methodology adopted is Design Science Research, given the specificity of the problem. Requirements models, data models, system architecture, and finally the prototype are presented. The proposed prototype aims to contribute to the reduction of regional inequalities, enhancing sustainability in the environmental, social, and human fields, as well as the inclusion of information that optimizes the reuse of non-perishable goods.*

Keywords: *Information systems, Information and communication technologies, Prototype, Requirements analysis.*

1. INTRODUCTION

Today, most organizations have been confronted with the need to detain more and more information underlying their operation. In this sense, they are defined as a strategy to reinforce Information Systems (IS) more and more and support them in Information and Communication Technologies (ICT).

Social organizations play a key role in the national and regional context in providing fundamental services to the community in which they are located. It is considered that ICT may play a fundamental and disruptive role in enhancing the aggregation of crucial information to this type of organization to optimize the provision of social services to the population where they are inserted.

The main results are the literature review in the field of the theme under study, as well as the various diagrams that allow modeling the IS of the organization. Another aspect that the prototype highlights focus on the fact that it aggregates information about each dwelling. Thus, it is recommended to increase the quality of life, improving the conditions of habitability. In this sense, it is considered that the door-to-door diagnostic strategy analyzing the real conditions of each community housing enhances the creation of intervention plans.

2. BACKGROUND

The review of the literature in the field of the theme is briefly exposed to address the various valences, namely sustainability, digital transformation, and low code platforms.

¹ Polytechnic Institute of Setúbal, Campus do IPS Estefanilha 2910-761 Setúbal PT, Portugal

² Polytechnic Institute of Setúbal, Campus do IPS Estefanilha 2910-761 Setúbal PT, Portugal

³ Polytechnic Institute of Setúbal, Campus do IPS Estefanilha 2910-761 Setúbal PT, Portugal

It is considered that the Sustainable Development Goals present a set of concerns in the domain of sustainability, (UNDP, 2015) to foster the definition of strategies. Sustainability is fundamental to our society (Silveira & Reis, 2021). The dimensions human/individual, technical, economic, social, and environmental are interrelated. In this sense, a multidisciplinary solution was presented considering the five perspectives of sustainability and the technologies to be used for building systems to improve the overall satisfaction of people (Reis, Cagica, Silveira, Russo, & Marques, 2021). It is also considered, (Reis, Cagica, Silveira, Russo, & Marques, 2021) that ICT enhances the implementation of more sustainable solutions in order to enhance the provision of better and more services to citizens.

Digital transformation is of particular interest as it enhances the development of citizens' living conditions (Wong, Baker & Driver, 2017). In this sense, it is urgent to evaluate how to create value for institutions, driving the creation of innovative business models (Zott & Amit 2017). The definition of digital business strategy is very important (Bharadwaj, Sawy, Pavlou, & Venkatraman, 2013). However, it is considered crucial to define strategies to improve this digital transformation (Charan, 2016; Schwertner, 2017).

The Low Code development approach, given the specific context of social organizations, is an important concept that enhances approaches to the current software development challenges. Rapid development tools have been presented as an alternative to traditional development environments (Wong, 2019). However, its popularity was low due to the growing importance of digital transformation (Hecht, 2019; Outsystems, 2019; Bloomberg, 2017). In this sense, it is considered that in view of the specificity of the organization under study, the development of low code may be adequate because of its characteristics and rapid development and consequently cost reduction (Ploder, Bernsteiner, Schlögl, & Gschliesser, 2019). The low-code development approach is supported by a variety of available platforms on which excel is based (Rymer & Koplowitz, 2019).

3. PROPOSAL SOLUTION

The creation of an application that enhances the recording of the living conditions of the community's residents can constitute an instrument capable of generating statistics to enable them to compete in public tenders and to fill in the housing gaps in the community. An example of this strategy is the social cuisine they obtained because of a contest to which they applied. This new valence of the social center allows serving meals to the needy of the community against COVID.

The research methodology adopted is Design Science Research (DSR), given the specificity of the problem and because it is a research methodology indicated for ICT research projects. The DSR is a method that fits in the area of IS in which it contributes to the resolution of specific and complex problems (Bianchi & Sousa, 2015; Peffers, Tuunanen, & Rothenberger, 2007), allowing one to interact in order to create the artifact.

3.1. Requirements Models

To develop the practical solution, the process of developing the analysis of requirements such as methodology was initiated to represent the characteristics that the software or system to be developed must meet. Subsequently, the data model and architecture of the solution were designed. In this article, the multidisciplinary prototype is presented, which includes aspects in the scope of citizens' housing.

3.2. Data Models

Given the specificity of the organization under study and aiming to add the various aspects in which the set of information of each citizen of the community that considers itself pressing to provide a better and more integrated service is presented in Figure 1 - the data model.

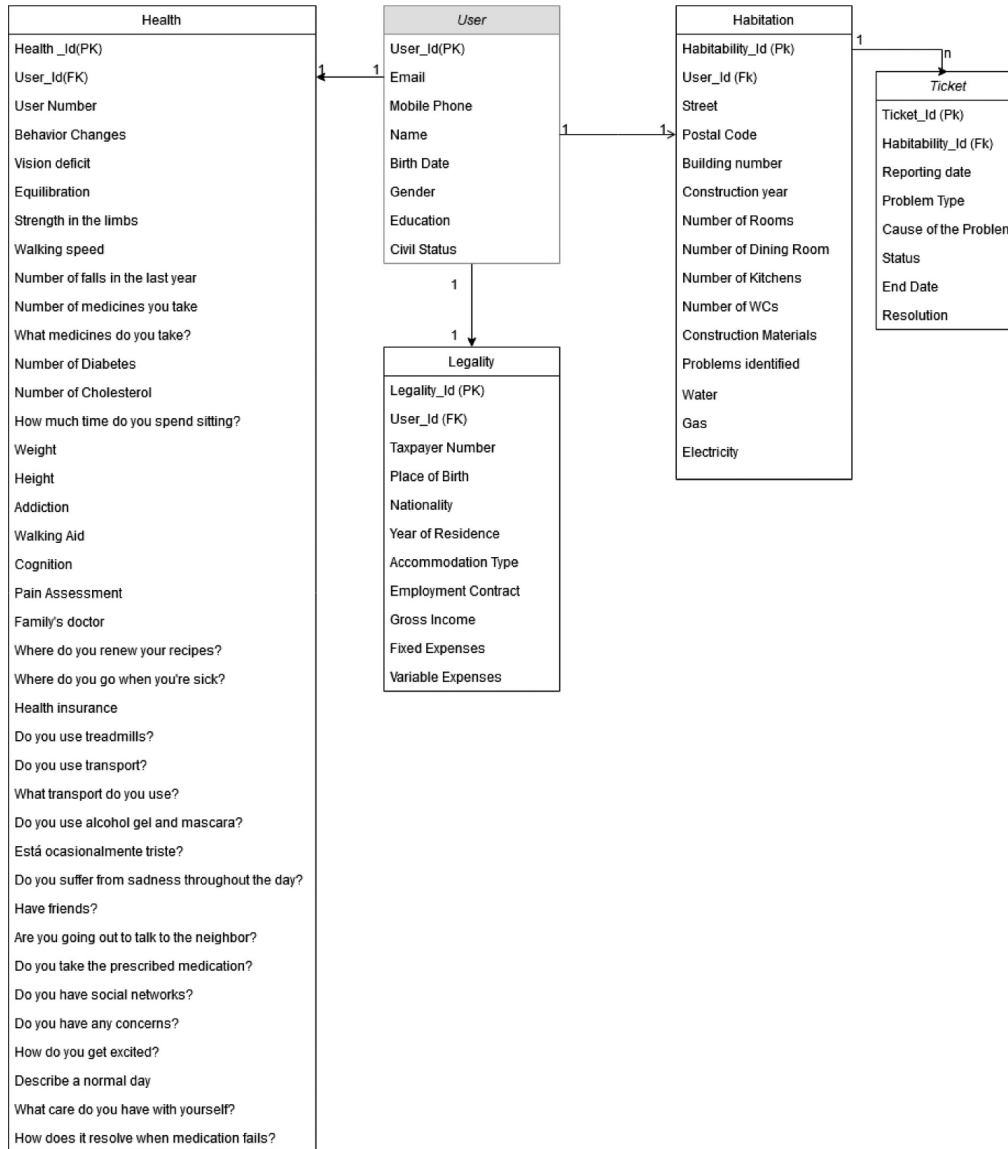


Figure 1. Data Model
Source: Lidon, (2021)

The data model presented allows to relation the information of the citizen in the areas of health and the situation of legality in the country. It also allows the registration in detail of the conditions of habitability to allow interventions with the objective of increasing the quality of life.

3.3. System Architecture

The architecture presents an overview of the system given the specificity of the problem. The model presented in Figure 2 implies the form of iteration between the various actors, describing how the system is organized and emphasizing the communication components.

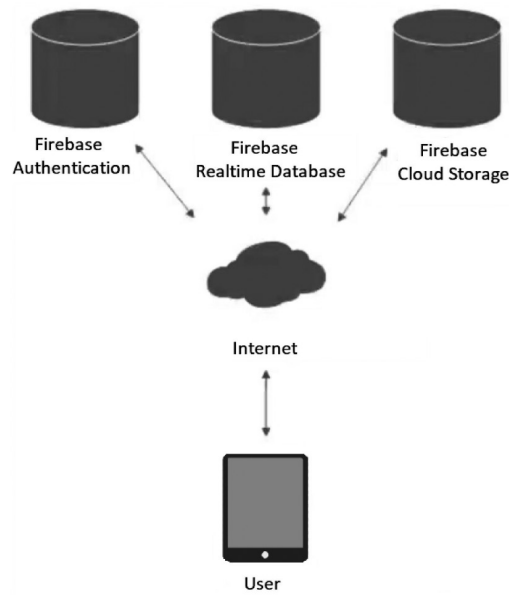


Figure 2. System Architecture
Source: Lidon, (2021)

Figure 2 presents the system architecture emphasizing the authentication process and the storage of information in the cloud.

3.4. Prototype

The data model and system architecture allowed defining the prototype of the application. It should be noted that the multidisciplinary prototype and information aggregator have implied a diversity of screens. This article only presents the habitability and ticket management components.

Habitability Condition:		
Housing Id: <input type="text"/>	Number of Rooms: <input type="text"/>	Issues identified: <input type="text"/>
Street: <input type="text"/>	Number of dining Rooms: <input type="text"/>	Water <input type="text"/>
Postal Code: <input type="text"/>	Number of Kitchens: <input type="text"/>	Gas: <input type="text"/>
Building number: <input type="text"/>	Number of WC: <input type="text"/>	Electricity: <input type="text"/>
Construction year: <input type="text"/>	Construction Materials: <input type="text"/>	<input type="button" value="Next"/>

Figure 3. Habitability conditions
Source: Lidon, (2021)

Figure 3 presents the information that was considered pertinent to characterize each community housing.

The management of tickets is interesting because the civil engineer and the citizen will have the opportunity to interact with the system.

Ticket:

Reporting date:

Problem type:

Cause of the problem:

Status:

End Date:

Resolution:

Figure 4. Ticketing System

Source: Lidon, (2021)

The Ticket component of the system will allow the civil engineer to rotate the process over time to update the system and the progress of interventions in the homes of citizens. On the other hand, the citizen interacts with the system by recording the problems he is experiencing in his dwelling. One also can consult the progress of its request for intervention.

4. FUTURE RESEARCH DIRECTIONS

Future work needs validation in real context to select a sample of dwellings to measure the feasibility and usability of the application.

It is also considered to be pressing to increase the level of functionality of the application after its full evaluation in the community. It is therefore intended to optimize implementation and assess the feasibility including further measures to increase the level of implementation of sustainability.

5. CONCLUSION

Social organizations are confronted in their daily lives with a set of constraints not only in their implicit operation but also, concerning deter free applications that meet their specific needs.

The study allowed the creation of an application for the management of living conditions in a community located in a city. The community under study is in an old neighborhood with economic needs and century-old houses where an aging population resides.

The literature review in the field of the theme and emphasizing the analysis of the pertinence of the inclusion of contributions in the field of sustainability was of particular interest. It should

also be noted that the DSR methodology proved to be adequate for the development of the work allowing the iterations necessary for the construction of the artifact.

The prototype created is multidisciplinary and aggregator of the various valences implicit in the management of citizens. Thus, enabling more effective and efficient management, enhancing the provision of better services, and resulting in the increase in the quality of life of citizens essentially in the face of the constraints in times of pandemic.

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