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RESEARCH ARTICLE

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ERGONOMIC ASSESSMENT OF AVODAH SCALE MANAGEMENT SYSTEM INTERFACE QUALITY: A PROJECT-BASED LEARNING CASE STUDY

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ABSTRACT

This work aims to present, as a case of use, the process of the build of the solution of a system of generating scales for the Methodist Church in Palmas, called Avodah. Additionally, was apply ergonomic assessment of interface quality said system using the Nielsen Heuristic. The results get were used to improve the proposed solution, molding it to the needs of its users.

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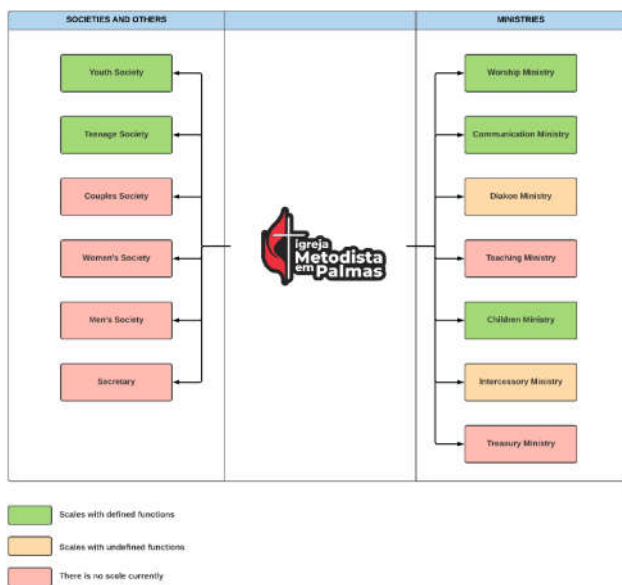
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INTRODUCTION

The implementation of Project-Based Learning (PBL) to the teaching and training of software engineering has been successfully applied for undergraduate students (LETOUZE, 2016). For example, it has been used for teaching software architecture (RUPAKHETI, 2015) and in a first programming course (JAZAYERI, 2015). Actually, its use is included in the recommended sets of best practices for computing curricula such as the ACM/IEEE's CS2013 (TOPI, 2010). A clear testimony of its application at the undergraduate level is given by Gary (2015) when they affirm that for the past decade at Arizona State University (ASU), "we've implemented PBL as the central feature of the Bachelor of Science in Software Engineering" moreover, they say have the responsibility not only to equip the students with the technical skills they need to start a career but the ability to apply, evolve, and practice those skills throughout their lifetime. Consequently, PBL provides students with these more durable benefits. Therefore, the goal is to apply the concept of translational research (GUIMARÃES, 2013) in order to obtain a solution to a real problem. The chosen problem aims to solve a need of the Methodist Church, which arrived in Palmas in 1999 through the "Mission Project One Week to Jesus", where it was built with the help of several missionaries from all over Brazil.

Currently, at 22 years old, the church has a total of approximately 150 members, most of them young people, as well as families and the elderly. The Church is divided into ministries, where each one has functions and works that work together. Within these, weekly, monthly and quarterly action scales are organized, where the people included are destined to be doing their job on the day they are scheduled. For this organization, scales are used to designate functions in all its ministries, using Excel¹ as a tool. Each month it was necessary to assemble a new scale, thus taking a lot of time and work, as it comes very close to a job done manually. In addition, can have records without a standard, it is very difficult to have a history of these scales and their participants since this occurs in a decentralized way and the data are not stored in a database. Given this scenario, the systematization of this scale generation process was proposed. However, for this, a series of elements were considered, among them, the characteristic of the future users of the system, which is characterized by having different types of users who will handle the system, considering that currently among the future users there are young people com have easy handling of digital solutions and there are also older people who have not had much contact with computers.

¹<https://www.microsoft.com/pt-br/microsoft-365/excel>



Source: Authors' elaboration, 2021.

Figure 1. Church Scale Structure

Thus, it was necessary to consider the usability aspects for the proposed solution, using Nielsen's heuristics as metrics, in order to collect user feedback, and with that, improve the system that will automate this process. The process of choosing the heuristics was carried out after bibliographical research on the existing methods to obtain the degree of user satisfaction. The choice for the heuristics mentioned above was due to the characteristics that the authors wanted, which was to obtain a model that facilitated the interaction between the audience and the solution, and enabled data collection through a questionnaire with questions referring to each heuristic. Thus, after understanding the state of the art in the context presented, it was understood that this model would meet the desired criteria. Therefore, we seek to present the activities developed during the development of the Avodah System, which is a system that aims to meet the needs of the Methodist Church in Palmas and how the application of usability research using Nielsen's heuristics can contribute to its improvement. To that end, we aim to expose how the student uses the knowledge previously acquired in the context of the undergraduate course in Information Systems at the State University of Tocantins - UNITINS. And we use Project Based Learning - PBL to integrate the diverse academic and technical experiences of our team members

METHODOLOGICAL ASPECTS

In order to present the methodological course of this work, we divided it into two steps, firstly, the software development cycle will be exposed. Subsequently, the process and application of Nielsen's heuristics to assess the usability of the system are presented.

Software Development: For the development of the Avodah System, it was necessary to study the process used for the construction of scales and their administration. Given this, we sought to understand the functioning of church scales regarding their restrictions, the functions in which people are linked, the intervals used by each scale, and how its use is important for the organization of church events. After that, a survey and study of the different audiences of the church were carried out regarding their preferences and affinity with the developed system, taking these data as a way to apply them to its usability, contributing to its improvement. To understand the organizational structure of the church, a survey of information was carried out through a meeting held with the pastor and its leadership, where they described each existing ministry and society and how they function. After that, it was possible to assemble a visual panorama of the current structure of the church, from a perspective of which areas currently use scales. The Methodist Church in Palmas is currently

divided into ministries and societies, each of which has functions and works that work together. Within these, weekly, monthly and quarterly action scales are organized, where the people included are destined to be doing their job on the day they are scheduled. The figure above details the structure of the church's ministries and societies defined through a perspective on which ministries and societies use scales. Among these, there are scales with determined functions, scales with non-determined functions, which are simple scales with only the date of the event and who will be doing some work, and finally those that do not currently use scales.

Thus, a survey of the needs of the church was carried out, that is, we have the following ministries:

- **Ministry of Praise:** rosters take place monthly, often on Sunday evenings in family services, with the exception of one Sunday a month, where people are scheduled to perform both in the morning at supper services and at night. The restriction of this schedule is limited to not having the same person assigned to different functions on the same date, but allowing them to act at different times. The functions that make up the ministry are Guitar, Voice (Teacher and Back Vocal), Keyboard, Bass, Drums, Percussion, and Media/Sound.
- **Ministry of Communication:** the scales of this ministry also take place on a monthly basis, with no defined days for action. They are composed not only of functions, but they work with publication posting times, post type, and the title or purpose of the publication, in addition to working with people who are not linked to this type of scale, as in the case of the "Interview" function, where the person responsible for conducting the interview and the person to be interviewed is displayed, where the same interviewee does not necessarily need to be contained in this type of scale. The restriction of this scale includes not having the same person in different roles on the same date. The functions that makeup is Image, Editing, Subtitles/Publications, Stories/Group, and Interviews.
- **Sunday School Ministries and Children's Work:** in this case, rosters are quarterly and simplified, routinely operating on Sunday evenings during family services. Although there are certain functions, they are not shown in the scale model currently used, but the functions are teachers 0 to 4 years, 4 to 7 years, and 8 to 11 years, where the age group contained in the description of the function is referred to the church children's classes.
- **Youth and Youth Societies:** are different societies, but together they use the same scale, which refers to church cleaning and snacks that take place on Saturdays, the day when the scales take place. They are carried out monthly, paying attention in a subjective way to the cells that make up societies, wherein these cells there is a group of people who work in snacks and cleaning. The restriction of this scale does not allow for the same cell to be scheduled for lunch and cleaning on the same date, except in cases where cleaning is classified as "GENERAL CLEANING", where all cells are called to be in the cleaning, usually occurring when there is a youth and youth event in the church. In this scale, there is no determined pattern of functioning, which leaves the breeder free to assemble in the way that is best allocated during the month. However, it is approached as a scale with determined functions and people always active

After obtaining the characteristics of the scales and understanding the main characteristics of the scales, it was decided to design the system, in order to carry out the steps of seeking to develop the system as recommended by the good practices adopted during the course and aiming to meet the needs of customers. This stage took place with the elaboration of UML diagrams that present the abstraction of the requirements raised with the stakeholders and validated through interface prototypes. Then there is the System Architecture, where design patterns, application layers, and programming language are defined. Finally, the Implementation Tools are defined. In turn, the elicitation of Avodah System requirements was discussed in face-to-

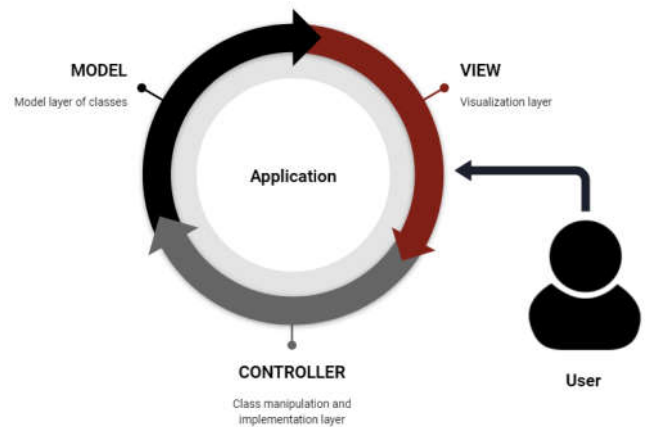
face meetings with members of the Church Leadership, where leaders of each ministry and society that use scales were involved. This meeting aimed to define the main functionalities that will be present, classified according to their priority. The priority of the requirements was based on the requirements and restrictions discussed in the meeting with the Church leadership, where the names “essential”, “important” and “desirable” for them were adopted. The requirements document produced is available at the link: https://pdfhost.io/v/Or41zUBh_DOCUMENTAO_SISTEMA_AVODAH.

In turn, the elicitation of Avodah System requirements was discussed in face-to-face meetings with members of the Church Leadership, where leaders of each ministry and society that use scales were involved. This meeting aimed to define the main functionalities that will be present, classified according to their priority. The priority of the requirements was based on the requirements and restrictions discussed in the meeting with the Church leadership, where the names “essential”, “important” and “desirable” for them were adopted. In this context, the class diagram, entity-relationship diagram, use case diagram and activity diagram were built and validated. Once the UML modeling of the system was completed, it was necessary to assign them to interface prototypes. For this, the Adobe² tool was defined for the same reason, it allows the creation of interfaces in an agile way, with modern, minimalist components, and for the same reason, it offers to create navigation flows between the prototypes, thus being able to model the entire system flow for analysis and validation. At first, the prototyping of the system was not intended to be validated by church members because it was an abstraction that would assist in its development, where the developer was guided by the pre-defined prototypes in the tool, as this contributed to organizing how the distribution of information on the screens would be so that it does not require many clicks and interactions with the user since the purpose of the Avodah System is to automate the process of generating scales in the church. After the initial abstraction, it was seen that the design could improve, so during the implementation, new components and information were added to the screens, in addition to changing system colors that would make the understanding of basic actions by the user faster and more effective. These changes resulted in a more attractive, user-friendly and objective interface.

After the process of ideation with diagrams and screen prototyping, a discussion was held with the advisor about the tools, frameworks, development languages, databases, etc. that will be used to build the solution for the Methodist Church. Thus, the following tools for software development were defined:

- Visual Studio.
- SQL Server Management Studio.
- Entity Framework.

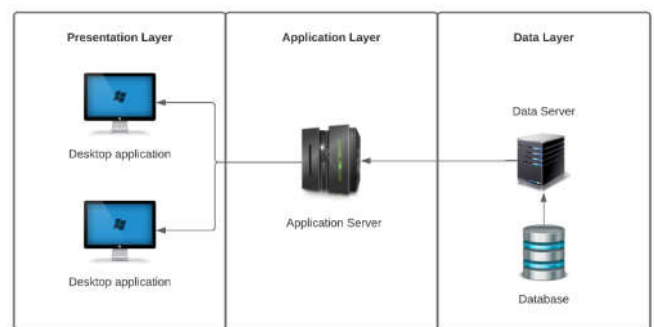
In detail, was definite like programming language the C#³ and the .net Framework⁴ were defined as the development environment. The database used was SQL Server⁵ in view of its characteristics, which guarantees an excellent adherence with the other defined items. The development IDE used was Visual Studio⁶. Thus, in the development execution, the MVC (Model - View - Controller) development pattern was used for this solution. Models are the modeled classes and their corresponding attributes that compose them. Controllers are responsible for implementing the methods and functions, respecting the restrictions and rules established by the organization, where models are instantiated as objects and controllers manipulate these objects. The visualization layers provide the interaction between the user and the system, becoming the channel for the controllers to execute the system functions and thus affecting the models.



Source: Authors' elaboration, 2021.

Figure 2. MVC in application

The architectural pattern chosen for the project was the layered architecture, taking into account the authors' experiences and because it adapts perfectly to the needs on the screen. In this way, the architecture was defined as shown in the Figure 3.



Source: Authors' elaboration, 2021

Figure 3. Layer Structure

Therefore, the system was built using mechanisms that aim to facilitate the development of a system with C#. Thus, CRUD's (Create - Read - Update - Delete) were developed with Entity Framework with model first, which consists of reading the application classes by the entity and it generates the database tables with their respective attributes and relationships, including auxiliary N to N relationship tables, and thus optimizing the DB creation process. For database versioning, migrations were used. The code repository used was Git Hub⁷.

Evaluating the Usability of the Avodah System by Applying Nielsen's Heuristics

Definition and Choice of Heuristics: With the system already in the testing phase and aiming to seek improvements in the MVP produced, we sought a strategy to assess the system's usability. By making a study of models and forms of evaluation that could meet this need, through bibliographic research. Therefore, before choosing the heuristics as a form of evaluation, other forms that were possibly indicated for use in this work were studied, such as: Card Arrangement method, Cooperative Evaluation, Co-discovery, Incident Diaries, etc. It was seen that they did not serve well in the context of the system and/or users and required more evaluation time than the heuristics, thus, they were discarded as a possibility. In this scenario, we define the usability evaluation model called Nielsen's Heuristics. Developed by Jakob Nielsen in 1990, this model aims to find problems that can have a general impact on the system and to evaluate the system interface in isolation, so that the problems found by the evaluators do not interfere with each other, as the evaluators perform a test at a time and so they are not influenced by the errors

²<https://www.adobe.com/br/products/xd.html>

³<https://docs.microsoft.com/pt-br/dotnet/csharp/>

⁴<https://dotnet.microsoft.com/download/dotnet-framework>

⁵<https://www.microsoft.com/pt-br/sql-server/sql-server-downloads>

⁶<https://visualstudio.microsoft.com/pt-br/downloads/>

⁷<https://github.com/>

found by another evaluator, at the end of the tests, indicators are generated so that the results can be compared, and thus the corrective measures are implemented. The system's screens were developed to serve the Church's diverse audiences, and achieving this goal required an intuitive assessment model with a test involving participants with different perspectives and levels of familiarity with computers and software. Then, a test was created in the system to be carried out by the evaluators and at the end of it, a questionnaire was made available with questions referring to each aspect of the system and respectively to each heuristic. It was seen that Nielsen's Heuristics responded positively to the proposed strategy and cooperated to implement improvements and corrections in the Avodah System.

People Selection Process for Data Collection: Thus, the process of choosing people to carry out the usability assessment was carried out. They were divided into three groups, namely: members of the Methodist Church in Palmas, UNITINS students and a group of other individuals who do not fit the first two groups or chose not to identify themselves. In short, no personal data from the people who performed the tests were collected, as they are not relevant to this research, we sought to assess the performance of the Avodah System in relation to its usability. Individuals from the Members of the Methodist Church in Palmas group were chosen based on the ministries that currently use scales. People who act as ministry leaders and others as active members of the ministry were selected. The leading people of the ministries who acted as the "Administrator" type user, carried out the registration of the members who subsequently carried out their due tests and data collection. Finally, the group of those who did not fit into the other groups or did not identify themselves were randomly selected to explore a different perspective from the members of the other groups.

Usability Test Definition: Initially, three tasks were defined to be performed to test the usability of the Avodah System. The tasks were: registering a person, creating a scale and exporting the scale. Users of type "Administrator" were previously registered, while users of type "Standard" were registered by administrator users. The registration process of the people selected for the usability test was done so that at the end of registration, the registered user receives a password generated by the system, and it is sent to that user's email, maintaining confidentiality and allowing the user accesses the system with the registered email and the generated password to perform the defined tasks. The task of Registering a Person in the System was intended for users with the "Administrator" profile, where they were previously registered and received a login and password to register another user. The other tasks were performed by the two types of users present in the system, thus creating a scale and exporting the scale. The creation of the scale in the use case of a user of the "Administrator" type was performed after the person was registered, so when creating the scale, the person that the tester user registered was already inserted in the scale created by the user. In the case of the "Default" type user, the user logged in because he does not have access to the registration of other people, directly performs a scale creation and its export later.

Assessment Instrument: The questions (<https://forms.gle/g1UjK3Vb3c6tgmuR9>) were made available to all those chosen to participate in the assessment through an online form. In addition to these questions, a non-mandatory discursive question was inserted in which the evaluator could describe opportunities to improve the system. The applied form is available in Appendix A. As the study is performed in a single software, this test is considered a case study, that is, its results and conclusions cannot be generalized to other programs.

Tools Used in Conducting Usability Testing: Google Sheets and Google Forms were used to perform the Heuristics application. The use of the first tool mentioned was due to its cooperativeness with online forms, making it easier to bring the data collected by the form to the spreadsheet, generating the indicators and applying Nielsen's Heuristics on them, since it has perfect integration with Google Forms. Given this integration, Forms was used as a data collection

tool through the research and usability evaluation form of the system made available after the User Experience test of the system for the chosen people.

RESULTS

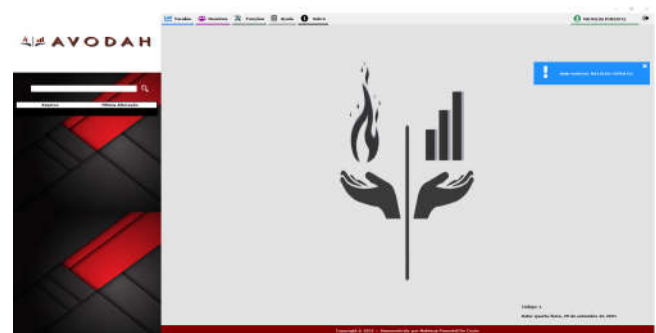
The results obtained in this work were divided into two parts: system development and application of heuristics.

System Development: The first outstanding result of the results obtained in this work is the development of the Avodah system, which was conceived to meet a demand from the Methodist Church in Palmas and to optimize the process of generating scales currently used. Its definition process involved almost all stages of Software Engineering, bringing with it the system abstractions in UML notation, requirements and prototypes, all documented. Defining the system as a desktop platform was beneficial both to serve the Church's diverse audiences and its savings in hosting expenses, thus seeking a solution that does not require a high cost for the Church. Below we present the system login screens, home screen and the scale customizations screen, in the Figure 4, Figure 5 and Figure 6 respectively.



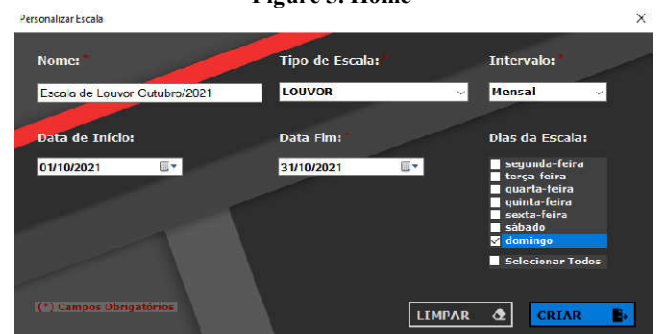
Source: Authors' elaboration

Figure 4. Login screen



Source: Authors' elaboration.

Figure 5. Home



Source: Authors' elaboration.

Figure 6. Customize Scale Screen

Application of Heuristics: With the implementation of the system completed, an inspection of its usability was carried out using Nielsen's heuristics as an evaluation metric. As a result of the evaluation, some possibilities for improvement in the system were

raised and, consequently, these items were developed, that is, the Avodah system underwent an update that focused on restructuring the screens and some changes in the registration flows and generation of scales. To obtain system improvement points, a way was made available for users to describe their experience when using the system, based on the methodology for evaluating the heuristics. Therefore, a form created through the Google Forms tool was used to obtain the necessary data for this purpose. The questions were created based on the aspects that the heuristics assess separately in the system. The questions on the form are presented in Appendix A. In this scenario, a total of twenty evaluations were made, which were divided into fifteen tests with the group of evaluators "Methodist Church members in Palmas", four with the group "UNINIS students", and finally only a single test with the group "Others/Non-identified". These data can be seen in the Figure 7.

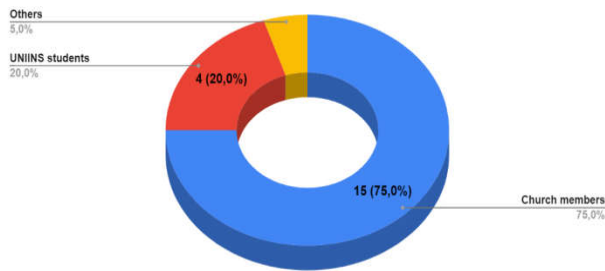


Figure 7. Division of respondents

Thirty-nine questions were created in total, separated by each section of the form, which refer to the heuristics. Among the questions elaborated, the system classification technique was emphasized as a way for the user to express his satisfaction with the aspect of the system being tested. This classification was evaluated using direct questions to the user, where he had the choice of options: Very Good, Good, Fair, Bad, Terrible.

As defined, there were three groups of evaluators who carried out the usability tests, the main one, which is the target audience of the system, are the members of the Methodist Church in Palmas. Fifteen tests were applied, and regarding the heuristics, the system was classified as Very Good with one hundred and six answers, Good with forty-one, two answers for Regular and finally only one answer for Bad in the item lack of documentation, which was made available as a corrective measure after this negative assessment. These classifications can be seen in the Figure 8 below. The group of evaluators made up of UNITINS students, more precisely students of the Information Systems course, has the characteristic that all members have knowledge of digital solutions and experience in application development. In this group, four tests were performed, and according to the form data, there were nineteen responses as Very Good and twenty as Good, as shown in the Figure 9.

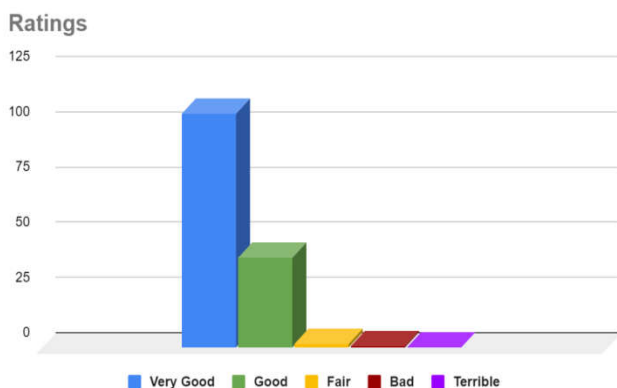


Figure 8. Classifications of Methodist Church Members

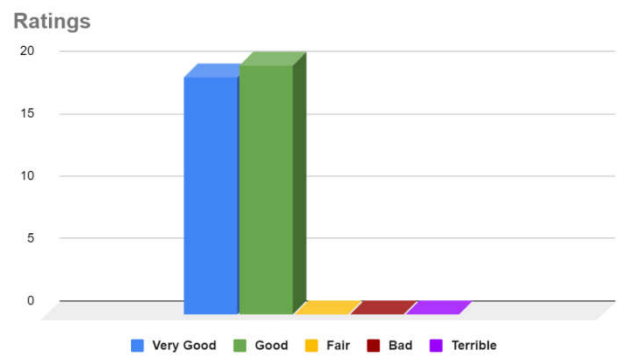


Figure 9. UNITINS Student Ratings

Finally, we have the evaluations of the Others/Non-identified group. This analysis seeks to obtain a different assessment from the other groups, since the only test applied to this group, the member was not part of the Church and did not have technical knowledge in the area of software development. In this way, it was possible to observe an analysis with a different and comprehensive perspective on the system. There were eight ranking responses for the Very Good option and two for the Good option. These can be seen in the figure below.

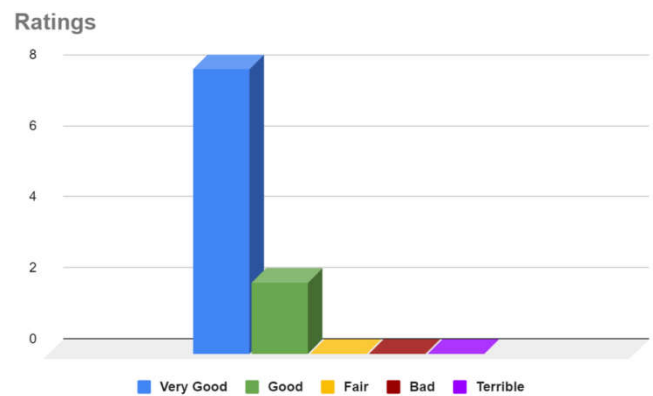


Figure 10. Group Classification Others/Non-identified

Problems and Points for Improvement Found: The purpose of Nielsen's heuristics is to find problems and vulnerabilities. After the application of usability tests, some relevant problems were pointed out to be corrected and thus obtain an evolution in the system. The main difficulties pointed out by the Members of the Methodist Church group were mostly related to not being familiarized with the use of computers. This validated the use of heuristics as an evaluation methodology, since this difficulty was already expected by the public, given the age range of some users to be more advanced.

In addition to these, there was an occurrence of a problem related to visual pollution on the System Home Screen, where users claimed to have unnecessary information on this screen. Another problem found was the fact that the system did not inform the user of inconsistencies in the selection of dates when creating a scale, the error was treated in the application, but it was not displayed on screen. Finally, due to the fact that there was a negative assessment regarding the non-availability of system documentation, this was understood as a point of improvement to be corrected. Problems encountered by church members can be seen below. Regarding the problems reported by the UNITINS Students group, there was only one occurrence, which is the terms used in the system. This problem was already expected because the Avodah System is directed to the context of the Methodist Church, since this evaluation group is not part of the association and, therefore, does not know some internal terms of the church.

Table 1. Evaluation form questions

Evaluation form questions
Heuristic 1: System State Visibility
How do you rate the ability to place yourself in the system (understand what was happening in the system a teach iteration)? *
Did you have any difficulty locating yourself on the system or seeing what was going on?
If possible, describe what was your difficulty in locating yourself in the system or seeing what was going on?
Heuristic 2: Compatibility between the System and the Real World
How do you assess the system's communication with the user? (Ex: icons, images, terms and descriptions, accent colors, etc.)
Did you have any difficulty in understanding the system because you didn't know any terms used?
What was your difficulty?
Did you find that any system function was not well described visually?
If possible, inform why the system function was not well described visually?
Heuristic 3: User Control and Freedom
How do you assess the freedom that the system offers the user to carry out the desired actions?
Did you feel limited as to what you needed to do in the system?
If yes, explain what your limitation was.
Heuristic 4: Consistency and Standardization
How do you rate the default of system screens?
On the system's home screen, there is a menu with tabs that direct to other screens at the top, did you have any difficulty navigating the system because you are not familiar with this type of menu?
If yes, what was your difficulty?
Did you identify any function of the system that was not what it appeared to be?
If yes, explain more about it.
Heuristic 5: Error Prevention
How do you rate the system for its ability to prevent errors?
Did the (*) icons showing which fields were required and the suggestion of the input format in the "Email" field help in the registration process in the system?
Did you come across any error when registering on the system?
If yes, did it help correct the error before registering?
If not, explain why.
Heuristic 6: Recognition instead of Memorization
How do you rate the system regarding its standardization?
Did you need to go back to some screen because you forgot some information needed to proceed?
Did you have difficulty remembering any information from your profile during the test or when logging in?
Heuristic 7: Efficiency and Flexibility of Use
How do you rate the system in terms of its efficiency and flexibility of use?
Do you believe the system serves both low-IT and experienced users?
If not, explain more about it.
Heuristic 8: Aesthetics and Minimalist Design
How do you rate the system in terms of its aesthetics?
Did you feel that some information displayed on the screens was not necessary?
Did you feel that any screen was visibly polluted with excess information?
Heuristic 9: User support to recognize, diagnose and recover from errors.
How do you rate the system for user support?
Did you have any difficulty understanding any error that was shown during the test?
If yes, what was your difficulty?
Did you feel that, when you saw the error, it was not possible to solve it without an external service?
If yes, explain more about it.
Heuristic 10: Documentation Support.
How do you rate the system in terms of supporting documentation and manuals?
Did you feel the need for a manual about the system and its features?
Did you feel the need to speak to external support during the test?

The Others/Non-Identified group did not find any specific problem, so its classification assessment was considered in the evolution of the system's screens.

Measures Implemented and Evolution of System Screens After the Application of Heuristics: The improvement points found to the detriment of the application of the heuristics that were collected in the usability test performed. Thus, we present below the measures implemented in the system, classified according to the heuristic in which they apply.

First Heuristic - System State Visibility: The Message Box component was used to generate notifications and alerts for the user on screen, but it required a click-to-close interaction and there was no way to customize the type of notification that was displayed. Thus, this component was switched to the concept of "toasts" messages, messages in the form of balloons that appear and after a period of time disappear from the screen, without the need for interaction with the user and fulfilling the role of informing what is happening, as well as being visibly more attractive with very vivid, minimalist colors.

Second Heuristic - Compatibility between the System and the Real World: this heuristic was applied so that all buttons in the system were changed, where they were only described with texts of what function that button performed. After its application, some colors were changed that, according to what the heuristic says, are not consistent with the action that the button performed, in addition to including intuitive icons on all system buttons, bringing a more agile and visibly efficient identification of its action.

Third Heuristic - Control and Freedom for the User: before its application, when configuring the scale to be created, the user had the freedom to inform any start and end date, where this escaped the rules established by the scales regarding the your break. Discovered this vulnerability through heuristics, a date limiter was implemented at the time of choosing the range by the user, where the user has as a limit the chosen range at the time of choosing the dates, thus restricting the user's freedom in order not to interfere with a system rule.

Fifth Heuristic - Error Prevention: the application of this heuristic in the system took place at the time of registration, where it was informed on the screens which fields were required, in addition to

showing suggestions for filling in data, in order to prevent possible errors that the user could commit in the process.

Eighth Heuristic - Aesthetics and Minimalist Design: this heuristic contributed to change the layout of some screens in the system, bringing a cleaner and more objective look, not forgoing beauty, as in the case of the Login and Home Screens.

Ninth Heuristic - User support to recognize, diagnose and recover from errors: this heuristic helped to implement in the system a type of message that is displayed when the user deletes another user by mistake, in this message the system offers the option to Undo change in the next five seconds after the delete action has been made, that way, in case it is a mistake, the user can revert the change.

Tenth Heuristic - Documentation Support: the application of this heuristic helped to make available in the system itself, through a screen, links for the user to consult the system's documentation, which were previously unavailable

In the heuristics Heuristic 4 - Consistency and Standardization, Heuristic 6 - Recognition instead of Memorization and Heuristic 7 - Efficiency and Flexibility of Use it was understood that there were no points of improvement or problems found, therefore, in relation to the participants in this research, the system already met these items in relation to the research universe.

FINAL CONSIDERATIONS

This work aims to show the process of conception and evolution of a software that seeks to solve a real problem in a Christian community in the city of Palmas-TO, the Methodist Church. This development took place by applying the set of knowledge obtained during the Information Systems course at the State University of Tocantins – UNITINS. The application evolution process took place with the application of Nielsen's Heuristics in three groups, Church members, UNITINS Information Systems students and people who do not fit into either of the two previous groups. The process was carried out with the availability of the system to be evaluated and after an online form was filled out with questions aimed at obtaining information to evolve the system. The evaluation process provided information that raised the quality of the software developed as intended by the authors. Thus, the system was registered with the National Institute of Industrial Property⁸ under the deposit number **BR512021002740-0**, thus configuring the main result of this work

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