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Tutti. Aplicación para la participación comunitaria dentro de los conjuntos residenciales

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Tutti

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ABSTRACT
This paper presents the design and development process of the app, Tutti, a project to promote community participation in residential areas through the use of concepts and methods such as gamification & cooperation design.

The project was developed with Design Thinking as the main design methodology. A human-centered design framework in which various steps are taken to ensure the solution to a human problem. Empathize, define, ideate, prototype and test were the steps taken in the development process of the project.

Because of the natural non-linear process that Design Thinking is based on, it's normal to go back to past steps, knowledge gained in later parts of the process can be important feedback for earlier stages.

The application Tutti uses gamification and cooperation design as the main way to promote community participation but also has tools for problem solving residential conflicts, which aims to improve the general mood of the community.

Tutti is currently at a level of medium fidelity prototype and it has been positive regarding the objective of the app, users have said that they need a tool like this to talk with their neighbors.

The project aims to create an inclusive experience so that every kind of user can participate with the community in different ways, giving users the tools to create accessible and creative activities. But also giving pre established activities to guide the user in the journey.

General Terms
Design

Keywords
Citizenship, residential areas, community, cooperation, gamification, design thinking, user, experience, problem solving, residential conflicts, empathize, define, ideate, prototype, testing

1. INTRODUCTION
It all started with a question: How can we solve the conflicts in residential areas?

Living with other people in the same space has always been complicated and complex. The different ideals, values and ethics that every individual has in how they live, creates problems when there isn't a culture of care and understanding of the other.

It's very probable that every person has heard about or even been in the situation of having a conflict with a neighbor due to a different way of thinking or their way of doing things.

And that is completely fine, as a society there will always be a different way of thinking for every individual, because of the unique context that everyone is born and raised in. But that does not mean that living in conflict should be something normal, instead humans should strive for a culture of community that supports each other and solves their conflicts in a peaceful and stressless environment.

The users for this project are adults from the age of 18 to 60 years old. This makes the range of users adults that have daily responsibilities, and because of that they do not have the time to be with their neighbors.

"Closed residential areas constitute a phenomenon of urban social segregation that has been growing in recent years in the city of Valledupar. This type of enterprise is configuring processes of change in the city, which not only affect the material spatiality of urban spaces, but also the symbolic universes of the people who inhabit it." Hermes E. (2016)

2. FRAMEWORK

To start, it is important to explain the theoretical and design frameworks that include all the concepts and theories the project is based on. As said in the introduction, the question to solve here is: How can we solve the conflicts in residential areas?

To solve this the framework is divided into two parts: the theoretical framework and the design framework. The first one will connect and analyze the concepts of citizenship, community and residential areas to help identify the problem and gain a better understanding of the topic. The second one explores concepts used to create the project such as gamification, design for cooperation in games, and what makes a good citizen.

This helps the project to have theory and design be interconnected, ending in an application that has every characteristic justified by theory and solved through design.

2.1 Theoretical framework

2.1.1 Citizenship

A citizen means to be a full member of a community, have the same rights as others and the same opportunities to influence the destiny of the community. When you become a citizen of a community, you agree to a 'social contract.' By accepting the opportunity to participate in your environment and make decisions, you must also abide by certain social rules to have a healthy coexistence with the rest of the community. (INE e IIJ-UNAM. Faro Democrático, 2020).

In addition, being considered as a citizen in a society, you get to obtain rights. This means having the protection of the society of which you are a part. From this also emerged the concept of human rights, where even if you are not a citizen of a certain society, you should be treated with a minimum level of welfare. These human rights have been strengthened to reach social equality, where, both men and women, and from the recognition of ethnic and social diversity, mechanisms have been implemented so that everyone can have a good quality of life. (INE e IIJ-UNAM. Faro Democrático, 2020).

“Live full and creative lives, develop their potential and form a meaningful existence consistent with the equal human dignity of all individuals” (Nussbaum, 2012: 216).

2.1.2 Community

Being a citizen means being part of a community. According to the Royal Academy of the Spanish Language (RAE), "the term community refers to the group of people linked by common characteristics or interests." It is understood that the concept of community must be anchored to a territory that defines its limits through peculiarities and particularities shared by the members of the community, according to the definition proposed by Tönnies (2010).

According to Elena Socarrás (2004) “The community is something that goes beyond a geographical location, it is a human conglomerate with a certain sense of belonging. It is, then, common history, shared interests, spiritual and physical reality, customs, habits, norms, symbols and codes.”

As Samuel P. says, "the community is something that arises naturally, it is a commitment acquired emotionally, to share common life schemes, goals and social traits with each other,” (Samuel Padila, 2015).

All this demonstrates is that the community is formed by the members who form a common sense of belonging through particularities and peculiarities that are emotionally connected through customs, habits, norms, etc.

"Currently the concept of community is more used as a strategy of action and definition for groups of people that constitute a sector of society." (Samuel Padila, 2015).

2.1.3 Residential areas

Residential complexes are spaces closed by barriers with surveillance 24 hours a day. These surveillance mechanisms make the free movement of visitors impossible. These new types of housing have been created to ensure the safety of residents and to prevent strangers from entering (Martínez, 2012).

These residents are known as neighbors when members refer to each other. The residential community is made up of neighbors, administrators (sometimes they are the same residents), maintenance and security personnel. Being part of a residential community entails respecting certain rules of coexistence, but often the implementation is done in a way that prioritizes the necessities of the directive table and not the one of the residents, often leading to the breaking of these rules.

According to Lang & Danielsen (1997), one of the contradictions of closed residential areas is that they promote the non-intervention of the state and, at the same time, promote hyper-regulation within the limits of the residential area, generating some internal problems regarding the rules: not only do they refer to the design of the dwellings and the environment, but also to the individual and social behavior expected within the complex. On the other hand, control over compliance with the rules of coexistence and building is strengthened, in some cases, through the design of infraction hearings made up of the same inhabitants of the neighborhood who sanction the infractions committed inside the residential complex.

Residential conflicts normally originate from the violation of these rules and regulations imposed by the community itself, sometimes only being handled by the board of directors/ administrators. These situations have different origins and it follows that one of them is the lack of coexistence between the neighbors and their residential community.

2.1.4 The problem

Coexistence in residential complexes is most of the time limited to greeting, to maintain a minimum structure of coexistence with the residential community. This portrays the establishment of a low community conformation and far from primary and secondary relationships (Ledrust, 1987).

The simple fact of living in a space surrounded by chambers, walls and bars that prevent access and circulation of people does not ensure social relations between neighbors, often only reaching to the extent of greetings or events such as Halloween and administrative meetings of neighbors. This means that residential communities have a low capacity to have a community vision (Thuillier, 2005).

The inability to have a collective and community vision creates many problems, such as a lack of empathy and understanding for

the other, creating more residential conflicts and complicating coexistence in the community.

2.2 Design framework

2.2.1 Gamification

Gamification is the design that focuses on human motivation in the process, in essence it is human-centered design. Gamification is the craft of taking everything fun out of gaming and applying it to real life or productive situations. In this way we have learned from the games how they motivate players to continue playing and using the product. Yu-kai Chou, a gamification pioneer says that almost all games are fun because they apply to different types of main motivational units which he identified as the octalysis of gamification: Epic call, creativity empowerment, social influence, unpredictability, loss and avoidance, scarcity, property and possession, and finally achievement and development.

The epic call is based on making the player believe that they are participating in something greater than themselves, a symptom that derives from this is players who are dedicated to helping create things for the community.

Empowerment of creativity is when players are engaged in ways to express their creativity and see the results of it.

Social influence is the motivational unit that is related to teaching, acceptance, social responsibility, accompaniment, and also competition.

Unpredictability is when you want to know what is going to happen but you don't know when, how, or where. The brain is involved and you think about it frequently.

Loss and avoidance is based on something happening to you for not having made a certain decision in time.

Scarcity is based on wanting something because you do not have it now, thinking that you do not have it makes you think about it and get it as soon as possible.

Ownership and possession motivates players because they feel like they own something. When someone has something, it inherently makes you act to make it better.

And finally, achievement and development is based on making progress, developing skills and eventually overcoming challenges.

It should be emphasized that the first level of gamification is being used here, but there is a second and third level that is more complicated. According to Yu-kai Chou, the first level must be mastered before continuing to the subsequent levels.

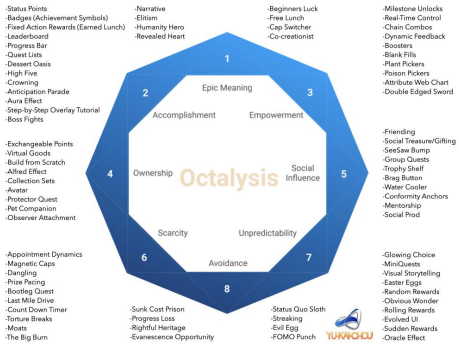

Figure 1. Gamification Octalysis Framework

In the above image it can be seen the octalysis, which will be of high importance later in the paper.

2.2.2 Design for cooperation

"Cooperation means working with others to achieve shared goals and benefit everyone. Humans can be selfish and competitive, but it's more instinctual for us to cooperate. In fact, cooperation is a huge reason we've been successful as a species. Some game developers have leveraged the power of cooperation to tackle huge challenges. In Foldit and Sea Hero Quest, individual 'work' is transformed into big data to fight disease and push forward scientific knowledge. Studies show that playing video games in co-op mode can lead to cooperative behaviors in the real world, and can even help negate the effects of violent content. Another perk: coordinated action and movement releases endorphins, giving players a mood boost." (iThrive Games Foundation, 2018)

This shows that designing for cooperation has a huge impact on the users, and by giving them situations to cooperate a better coexistence can be achieved.

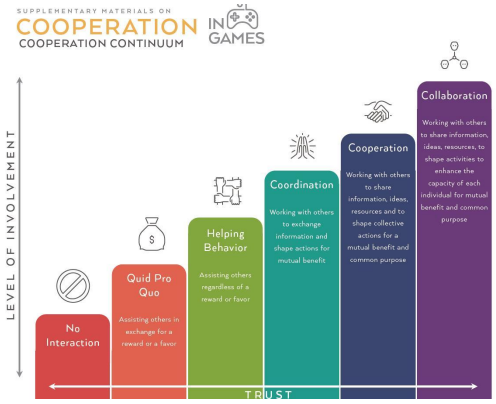

Figure 2. Cooperation Continuum for games

In the above image, is the next essential graph the project was based on, by creating functions and characteristics that help the trust go up, the cooperation between the users will increase.

2.2.3 How to be a good citizen

Being a citizen implies being part of a community. That is why we should all aspire to be good citizens or, on this occasion, good neighbors. According to Marelisa Fábrega, a lawyer and entrepreneur, ten ways to show good citizenship include being patriotic, model the personal qualities of good citizens, be a

productive member of society, be active in your community, keep yourself well-informed, be vigilant, participate in your nation is political life, be a mentor, be well rounded, and order your corner of the world.

These ten ways to be a better citizen are very important and the solution must connect its functions to these ten concepts. A good citizen will be able to interact with their residential community in a better way.

2.2.4 Continuums of interactivity

Another concept that was taken into consideration as a general theory is the continuum of interactivity. On one side passive experiences like reading a book and on the other side activities like painting that takes the interactivity of the user with the tools, pace or content; the amount of choice this control offers; and the ability to use the tool or content to be productive or to create.

Therefore, all products are interactive in some way or another and can be placed in the chart.

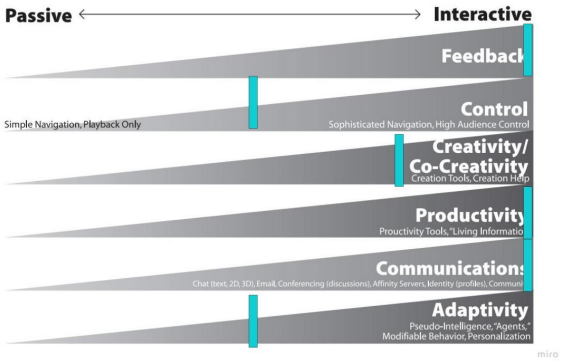

Figure 3. Continuum of interactivity

In figure three, it can be seen how each category of the continuum has a blue line that represents the approximate level of interactivity the solution could have.

3. EMPATHIZE WITH USER

The project first began by empathizing with the user, this consists of interviews with residents of residential areas and experts in the topic of citizenship, cooperation and communities.

3.1 User interviews

The interviews were done to one expert in citizenship, and one administrator and two residents from a residential area.

When interviewing the expert, the objective was to know how an expert would solve conflicts in a community with a focus on horizontal elements of social coexistence and community management. From this interview, it was learned that the problem of lack of good coexistence is not only in residential areas and focusing only on that could have negative effects on the investigation, and so it should be focused more on the human part of why people break the rules and impose their beliefs ending up in creating conflicts. It was helpful to notice that depending on the residential area it can be considered a community or not, because the interests of the people are divided. This comes from the cultural problem that is individualism, "a social pattern that consists of loosely linked individuals who view themselves as independent of collectives" (Triandis, 1995, p. 2).

The administrator interview was focused on their experiences and all the problems that are present most frequently, how to solve them and the approach they had. From this it was learned that residents prefer to communicate their complaints in a digital manner because it gives them a certain wall of social protection. But because most communication for problem solving is on group chats, information gets misunderstood frequently, creating more conflicts.

Lastly for the residents' interview, it was to know how they felt about their community, and their participation in it. It was learned that every person has a different situation, that conflicts can be resolved if there is proper communication but the main way of communication is by a group chat in a mobile applications because it is faster and also protects from confronting their neighbors directly when there is a residential conflict, and that gossip/complaints drive people away from participating in the community. Another thing that was learned is that even if the resident wants to change the community, they can not due to other responsibilities that take priority.

3.2 Approaching methodologies

3.2.1 Roleplay

Roleplay consists of acting out the role of the user in realistic scenarios to forge empathy and highlight challenges, presenting opportunities that can be met by design.

For this methodology, a group of five people was gathered for a session of around one hour, presenting a situation that residents frequently get. Every person was given a character to act. It was learned that people ideate their solutions better when they know the neighbors better but it is difficult to meet your neighbors when touching their doors because they think it would seem annoying.

It was done via *Discord*. An instant messaging and digital contribution platform that allows for voice chat meetings.

3.2.2 Love letter and break up letter

This methodology consists of writing a personal letter to a product. It often reveals profound insights about what people value and expect from the objects in their everyday life.

Instead of writing to a product, this time it was to the residential community, of which they would write about what they love about it and what they disliked. This gave important information about what they love or dislike.

Users emphasized in the decision making that othe residents take and how this causes problems but they also mentioned that they did not find opportunities to meet with each other.

4. DEFINE THE PROBLEM

Next, defining the problem is a very important step, in which the main question: How can we solve the conflicts in residential areas? Must be answered in an insightful manner to truly get the best solution.

4.1 Relationship map

The relationship map was the first step in the definition stage, since it is a diagram that helps to visualize all the actors involved

in a complex problem, as well as the type of relationships that exist between them. The most important thing of the map is to have the objectives, actions, needs and tools of the users. The development of a relationship map helped to find the actors within the residential areas, as well as the external ones involved.

At the conclusion of the relationship map, it was learned that a community is made up of several actors and each one of them can affect the individual functioning of each one, as well as the connections.

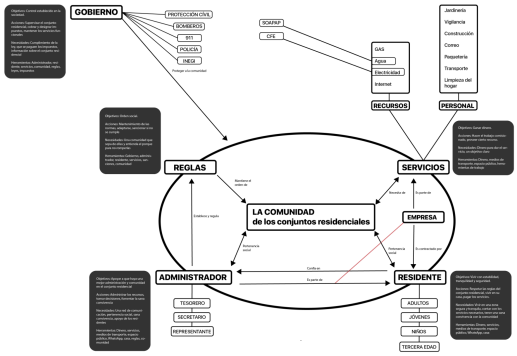

Figure 4. Relationship map

4.2 Categories

Next, the categorization stage helps to analyze our information input to separate the "chaff" from what really interests us in patterns and similar topics.

With all the information collected we can divide the information into 7 different categories: community, citizen, communication, responsibility, society, resolution and conflicts.

4.3 Insights

Insights are user understandings of the problem, as well as its context. It is something that could not be known without the interviews and methodologies of section three. It is necessary to extract value from the observations.

In residential areas, the residents value the time they have with their personal circle more and do not see the importance of interacting with their neighbors. This leads the residents to have an isolated attitude and they are unlikely to approach their neighbors because they do not know the other person.

Residents find it difficult to accept a change because they are already used to their way of life, and it causes new rules to be broken frequently.

In residential areas, residents with little trust in others find it difficult to accept new members because they think that it will cause them more problems, which causes the new neighbor to feel excluded.

In a residential area, the resident interested in getting to know their neighbors needs spaces to be able to get closer to them because it is not easy to go and knock on their door because they think that they can bother them a lot, causing them to no longer look for a way to live together.

In residential areas, residents who have lived in that place for a long time believe that they are more important than others and feel they own the space, causing friction between neighbors.

In a residential area, residents who are concerned about a situation have the need to express their concerns but often do not dare to talk about the problem because they think that others will see it as a nuisance.

In residential areas, residents who have little free time run away from the responsibilities of participating in the community as they need to rest, causing them to feel guilty for not participating.

5. IDEATE PROPOSAL

Now with the Insights, the new question to answer and the main problem to solve is: How can we promote community participation in residential areas to solve conflicts and help the residents coexist with each other? And so Tutti, the proposal to solve the problem was created, an application that allows its users to coexist and solve residential conflicts from a gamification stand point.

5.1 Principles of design

From the discoveries, it is needed to develop design guidelines that are going to be present at all times in the experience that is created.

Each Insight is connected to various principles of design, so that the proposal can respond to each one of them. The design commandments that will rig the proposal are as follows:

- Establish a channel of communication between administration and residents
- Promote the community participation
- Offer incentives to make people want to improve their community
- Use tools for conflict solving
- Incite the healthy coexistence
- That interaction can go beyond the proposal
- Makes the information transparent and true
- Promote cooperation
- Make the neighbors aware that they are in a community
- Allow users to express their concerns
- Maintain a simple communication

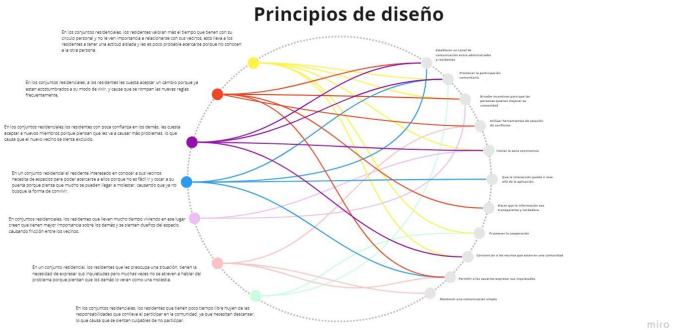

Figure 5. Principles of design

In figure four it can be seen how each Insight is connected to one or more principles.

In this way the residents will have clear the benefits of participating in the community and respect each other. It is hoped that the effect of coexisting more frequently in a positive environment generates a more united community and empathic with each other, lessening the amount of residential conflicts and opening the open dialog for collaborative decision making.

5.3 The proposal

It all started by giving ideas and justifying them, seeing why they would work and why not. Some of the first ideas was a tabletop game, which was discarded because playing a game with a neighbor like this takes too many steps on the cooperation continuum.

So after many iterations, an application was the best solution for the problem, as anyone with a smartphone can use it at any time of the day for a short amount of time.

The first step was to create a navigation map that showed all the characteristics and functions the app could offer, each function had to be justified with one or more parts of the octalysis of gamification. Every function of the application has three questions to answer: What is it? Why? How does it work?

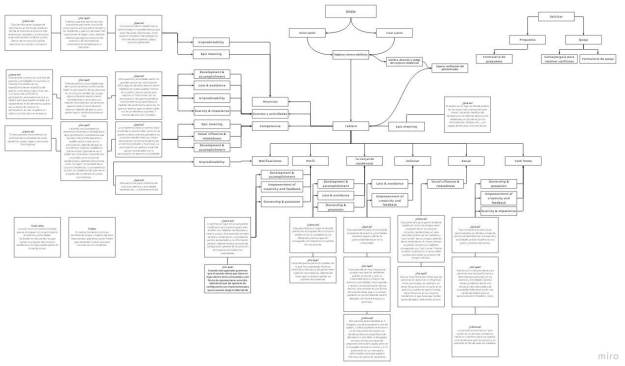

Figure 6. Navigation map

After that, a graphic was developed to connect each function of the gamification to the cooperation design and citizenship. In the center it can be seen an octalysis representing each side of it, while there's several circles that change in color around it, each circle represents a level of cooperation. And so from every side of the octalysis a triangle grows from it. This represents to what level of cooperation design the gamified function reaches. Finally, outside the cooperation circles, the black one that represents citizenship involves the whole graphic, having the concepts of what makes a good citizenship attached to one or more functions of gamification.

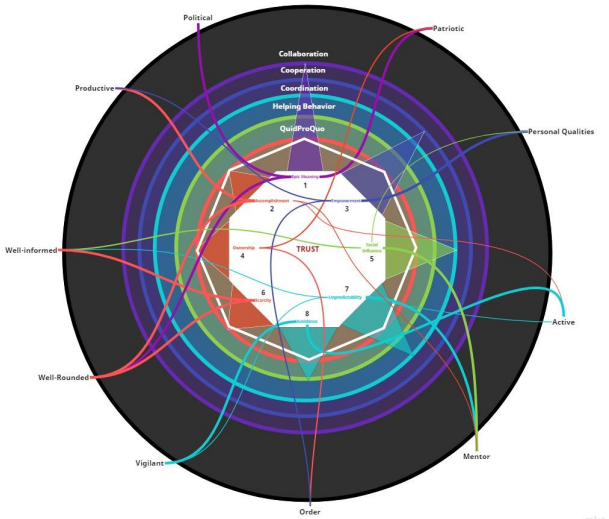

Figure 7. Tutti graph

For example, the Tutti home function of the app attends to the ownership part of the gamification. We think that this will only cause the user to reach *quid pro quo*, so the triangle is orange. Tutti home also attends to the concepts of how to be a better citizen in the Order and Patriotic points.

This gives the solution so much potential for the future. If every line and triangle is in the collaboration circle (light purple) it means that you have made a perfect application for citizen cooperation. **We will call this graph the Tutti graph.**

5.3 User persona, situations and scenarios

People are the users with a series of characteristics such as frustrations, needs and motivations. People help to focus the solution on the user and adapt it to their needs.

Each person also has a specific context, for which a situation that they live in their daily life with in respect to their residential area and a scenario to see how the solution helps the user was added.

5.4 Journey map

The journey map is used to accompany the design of the experience. It serves very well to map the route that the user is going to have through the proposal. It can be seen to identify which are the happiest or most frustrating moments of the user when living the proposal.

Figure 8. Journey map

6. PROTOTYPE

6.1 Low fidelity prototype

The low fidelity prototype was made with paper and markers, representing the screen of the application. The objective was to see if the flow of the wireframe feels good and also to find if the user needed a solution like this. The results of this prototype were positive, the users wanted to see the idea more developed because it sounded good and felt like a necessity. Some problems that were present in these tests was the confusion about navigating the app and learning about it. So, many notes were taken to be improved in the medium fidelity prototype.

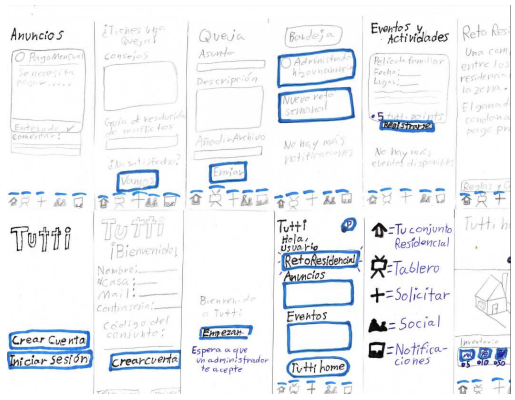

Figure 9. Low fidelity prototype screens

6.2 Medium-high fidelity prototype

The medium to high fidelity prototype had a very big change from the low fidelity. We started by establishing with a moodboard how the app would look and feel like. The style that was defined is a clear, basic, modern and fun app, with a community, emphatic, fresh and optimistic tone.

Tutti is an application that, by participating in monthly and weekly activities, you can earn points to support your residential area to reach a goal and receive a great reward. You can also earn Tutti stars to unlock rewards and features in the app. This responds to the epic call, development and accomplishment of the gamification.

The app first starts with the animation of the logo and the introduction to the registering process. After registering you are met with an animation of around one minute explaining how the point system in the app works. After that a tutorial will be shown explaining how to join an activity and gain points. This onboarding helps users to know the application before using it.

There's also the Tutti home, that you can unlock by getting Tutti stars, and by collecting more Tutti stars, more features to improve your virtual house will be available. Ownership and possession, empowerment of creativity and development connects Tutti house to gamification.

The application also contains a small social network that is limited to the residential area, that way you can communicate with your neighbors and welcome new ones into the community. This relates to the social influence and relatedness of the gamification.

Also, you can gain achievements by reaching certain goals, these achievements are represented as medals that can be shown in your profile. Additionally depending on the amount or kind of achievement you have more, a graph that represents you as a resident will change. Unpredictability and curiosity, loss and avoidance, and social influence connect with the feature.

Lastly, there is the request form where you can create advertisements, proposals, events and also suggest to your neighbor changes if you have a complaint about something. This connects with empowerment of creativity and feedback, scarcity and impatience, and epic meaning and calling.

In this way we can promote residential coexistence in a positive way with in-person events and have residential conflicts handled online and without losing information. Residents will be able to earn points and receive rewards for participating and communicating effectively with their community.

6.2.1 User tests

For the user tests, we had the objective to make the user feel emotion to participate in their residential community and make them think about it. As the application is right now it can not actually plan events or communicate with other neighbors, but it can open the thought of needing to talk with the community and recognize the importance of it.

The tests were proven to be positive in the objective of the application, users said things like "We really need something like this, the mood with the neighbors is very strange." But it also had problems regarding navigation with users of advanced age.

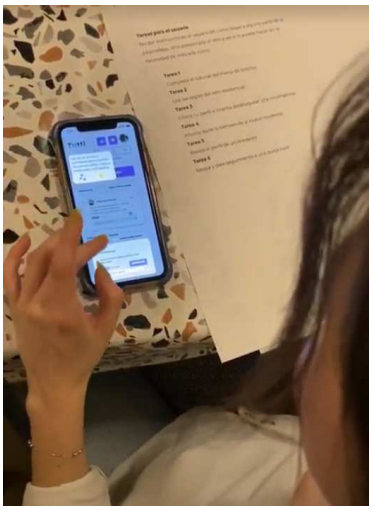

Figure 10. User test evidence

6.2.2 Changes for the future

As the proposal is still in the medium fidelity range of the prototype, there are a lot of changes that can be made to upgrade the experience of the application. Here, we present a list of possible changes that can be made for future development:

- Improve the overall onboarding experience of the app.
- Make the reward system more satisfactory when the user gains something.
- Implement the fully functional minigame of the tutti house to the experience.
- Changes to the UI for a better navigation

- Improvement to the activities system
- Make the application more inclusive and intuitive for elderly users

There is also to note that by following the Tutti graph and doing even more tests and variations, one day it could reach the purple circle, which would mean it became a close to perfection app.

7. CONCLUSION

Doing an investigation of this scale was something new to the team, a lot of introspection was made to keep improving the way we approached users and designed the project, the weakest part of the whole investigation was the approachment methodologies with the users, we feel it could have been done in a better way but we learned a lot with those errors. As for the strongest points of the investigation was the connection we made with gamification, cooperation design and what makes a good citizen. The tutti graph could be used for a lot more design projects and to establish a quality for experience design, also the design of the application feels very clean and smooth, it needs some more work and experience. But overall we are satisfied with how the project came out and it makes us feel eager to test the knowledge learned here in other projects to make something even better.

8. ACKNOWLEDGEMENT

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9. APPENDIX

Figure 1.
https://drive.google.com/file/d/1lwQTq1BUMMo_-DI1PF7_vkl1amSN6bYV/view?usp=sharing

Figure 2.
https://drive.google.com/file/d/1-9HSBO0nG1O253FYq3VY70RfK2puVD4r/view?usp=sharing

Figure 3.
https://drive.google.com/file/d/1x8awNjviJF19pU-Ev_Hisl5uaVtjSg2L/view?usp=sharing

Figure 4.
https://drive.google.com/file/d/1BIfcSrCIJAWFX7EXPkvE34NOskJwcEup/view?usp=sharing

Figure 5.
https://drive.google.com/file/d/1uR5aKOPIID5Lp8MQh-OSYbqst6y98TZA/view?usp=sharing

Figure 6.
https://drive.google.com/file/d/1COvL0TOdE1zogTgCFWWjy67_vhDnxD9h/view?usp=sharing

Figure 7.
https://drive.google.com/file/d/18f1WKE9ENG9_VqF0mTRnMHRbbbt0cthH/view?usp=sharing

Figure 8.
https://drive.google.com/file/d/1D0BxW72rWoDCn_PWcIkYtM0c0F3UwVqt/view?usp=sharing

Figure 9.
https://drive.google.com/file/d/170UOU16mRac0avFQdw64Jt3yOrFFYizE/view?usp=sharing

Figure 10.
https://drive.google.com/file/d/143M-YwPsIoIjmhRyOvqQqpDKyJq45IHD/view?usp=sharing

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11. LINKS

Blog: https://ase2tutti.wordpress.com/

Prototype:
https://www.figma.com/proto/9K23BSayZKPcTxEm91nhMf/Prototipo-de-media-fidelidad-Tutti?node-id=2%3A2&scaling=scale-down&page-id=0%3A1&starting-point-node-id=412%3A839&show-proto-sidebar=1