



CASA

LEVEL UP YOUR HOME, LEVEL DOWN YOUR BILLS

BY JACOB CAPABLANCA

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WELCOME TO CASA

Casa, a pioneering home-interface platform, is designed to empower shared homes to revolutionise their approach to understanding utilities and managing their consumption habits. This concept aligns with the United Nations' Sustainable Development Goal 11 (Sustainable Cities and Communities) & 12 (Responsible consumption & Production). This innovative tool not only introduces an engaging dimension to household management but also enhances the overall efficiency of resource usage.

The platform leverages access to household utility information to equip users with **two** distinctive features:

Primarily, Casa employs a **gamification strategy**, presenting households with interactive challenges embedded in their daily tasks. For instance, users may be prompted to conserve energy by keeping the main lights off after 9 pm. Notably, this gamified approach not only incentivises responsible resource use but also harbours the potential to foster a sense of camaraderie among household members.

Casa also provides households with a **breakdown of their utility consumption**, spanning past, present, and future usage. By consolidating information typically scattered across various platforms, Casa streamlines data accessibility, enabling users to make informed decisions about their consumption patterns. This feature not only facilitates efficient management but also encourages residents to adopt more calculated approaches to their resource choices.

In essence, Casa emerges as a sophisticated home interface, seamlessly blending gamification and utility data analysis to promote a more sustainable and cohesive living environment. Through its dynamic features, Casa is poised to redefine the way shared households engage with and manage their utilities, contributing to a more conscious and harmonious communal living experience.

DESIGN PROCESS

JUSTIFICATION TO DESIGN CHOICES

Initial Primary Research

As we wanted to find out what the pain points of the users we are designing for are, we conducted questionnaires consisting of 12 questions, and an open ended interview of 7 questions. The questions that the participants were asked to respond were around the topic of their utility usage and management systems, what their current habits are, and what they wish to have in terms of managing their utility consumption.

Results Summarised

From our Initial research through questionnaires, and interviews, we learned that our users have 7 needs: "I need..."

- Individual access to my household utility bills and summaries for transparency and accountability.
- A system that can distinguish usage between members or rooms in a household.
- A system with features that can proactively notify me of over usage.
- A system that predicts future price hike trends and warns me of ongoing ones.
- A system that accounts for energy consumed by idle appliances.
- More frequent summaries
- Better forms of incentives to challenge my habits.

From these findings, we were able to synthesise our mid fidelity prototype for Casa, consisting of 4 main important features, which are:

- Leaderboard & User Rankings
- Live utility usage tracking
- Appliance usage tracking
- Payment & Billing systems

User Testing Fair

We evaluated all 4 aspects of our mid fidelity prototype with 8 user testing participants, which participated in a Think aloud protocol and open ended interview session, followed by a System Usability Score test and Heuristic Evaluation sheet.

RESULTS SUMMARY

The combined use of task-driven tests, the Think-Aloud Protocol, and post-interaction interviews ensured a comprehensive, detailed data collection approach. Immediate feedback from the Think-Aloud Protocol complements the more reflective and detailed feedback from the interviews. This triangulation offers a multi-dimensional view of the user experience, ensuring that our findings are thorough and actionable.

Utilising researcher triangulation, we meticulously analysed and synthesised the data, discerning common themes from user feedback on four key interface components. The feedback that we received were generally positive as the users resonated with the solutions that were proposed and they think that it will be useful for their day to day utility consumption management, however, there are certain aspects of the prototype that remains in doubt.

USER FEEDBACK

Users expressed concerns regarding the leaderboard's complexity, unclear features, and lack of incentive, preferring smaller community rankings but appreciating the visual aesthetics. Live cost tracking faced challenges due to unclear widget purpose, navigation difficulties, and privacy concerns. Appliance usage tracking suffered from locational issues, unclear features, and a lack of user engagement incentives. Payment systems encountered problems related to prototype limitations, confusing user flows, privacy concerns, and navigation difficulties.

Our research showed that while the users empathise with the need of a utility consumption, our initial design confuses the user more than it motivates them. Users preferred a more simplistic approach to managing their utilities, and there is a clear lack of incentive that could help users maintain engagement with the system.



CORE FUNCTIONS

CHALLENGES

Casa's system is highly integrated with a person's home, sourcing intricate information of a household's energy output across electrical, water and gas utilities. It employs this data to generate ten informed daily challenges that refresh every day, and another ten weekly challenges that refresh every week. These challenges span in range of difficulty levels where greater difficulty translates to higher experience points (XP) rewards. The overarching goal for the challenges is to cultivate awareness among members regarding the environmental impact of their utility consumption habits. By tailoring challenges to individual user needs, Casa effectively alleviates the burden on residents. The challenges, characterised by their playful, flexible, and competitive nature, ensure that every member can participate to their desired extent. This approach transforms utility management into an engaging and personalised experience, encouraging a collective consciousness about resource consumption within the household.



Expanded Challenges Widget



Dedicated Daily Challenges Page



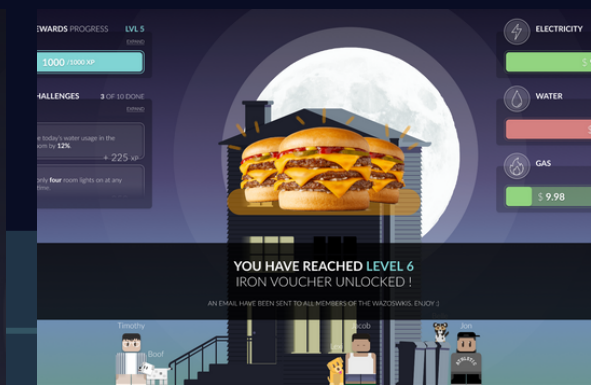
Dedicated Weekly Challenges Page

EXPERIENCE POINTS, LEVELS AND REWARDS

Experience points (XP), exclusively earned by successfully completing challenges, track a household's progress through 20 levels. Each level corresponds to a tiered reward system featuring casa coins, avatar items (clothing, accessories, and hairstyles), pets, screensavers, and vouchers. Unlocking these rewards requires accumulating XP for each level, with increasing appeal and uniqueness as the tiers progress: Iron, Bronze, Silver, and the pinnacle, Gold. The most exciting rewards, vouchers, appear at the final level of each tier, offering discounted or complimentary experiences at outdoor events, stores, or eateries. Members are motivated to complete challenges to unlock this diverse array of rewards. The system refreshes monthly, ensuring sustained motivation and a consistent influx of new, relevant rewards, maintaining the platform's appeal and encouraging continuous engagement.



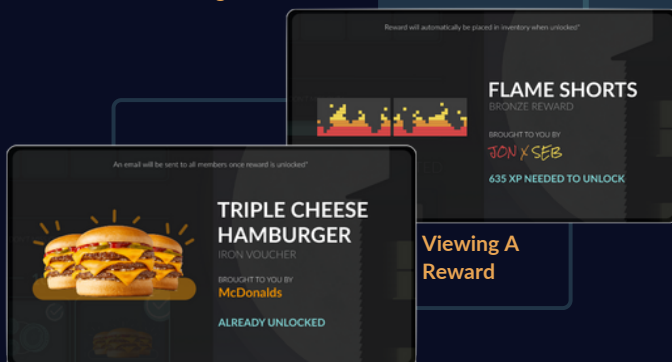
Dedicated Rewards Page



Leveling Up and Unlocking a Reward Notification



Expanded Rewards Widget

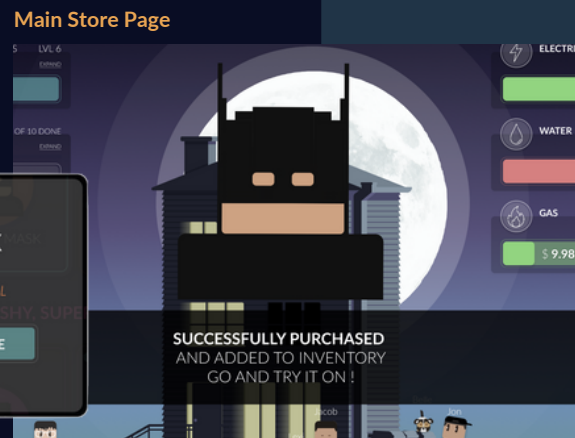
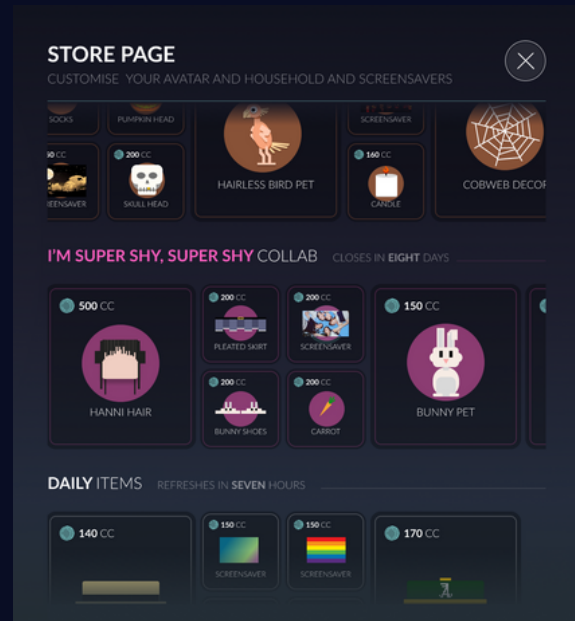


Viewing A Reward



CASA COINS AND STORE

Many of these rewards unlock Casa Coins (or points). This is essentially Casa's in-game currency which are used to purchase items from the store. The store offers these items in sets that expire, or rotate off i.e the daily set which provides new selections every day. This encourages sustainable purchases while propelling mystery and excitement as the entire item base is kept hidden from users. As with rewards, there are opportunities for seasonal and promotional collections which hosts uniquely themed items. These contribute to an entertaining experience and ensures Casa is known as being up-to-date and responsive to real world events and pop culture.



Expanded Utility Widget



Store Item Details Overlay

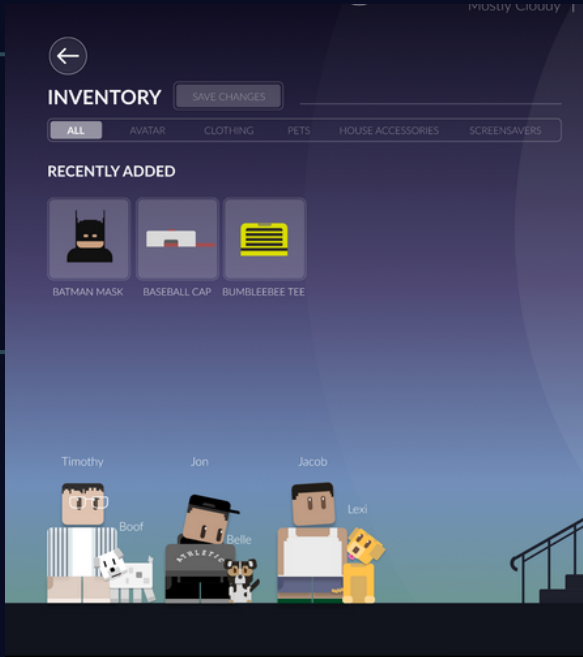
After purchasing from the store

UTILITY USAGE

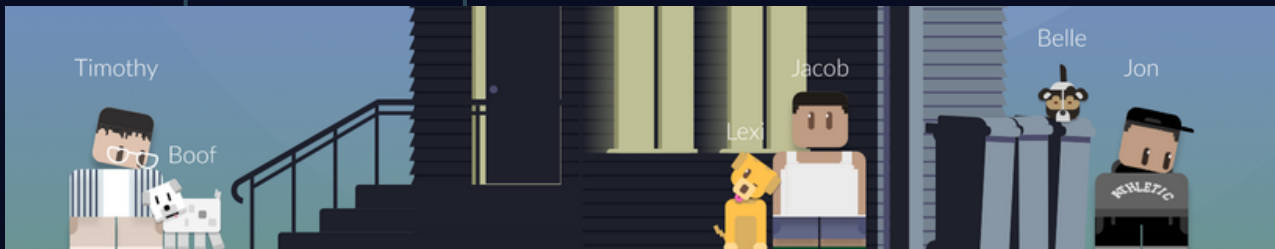
Casa's intricate utility monitoring system enables useful information about a household to be displayed. This occurs on the homepage as expandable widgets. It works by showing a household's utility expenditure through collated costs over the billing period. This is relative to the goal amount - what a household is calculated as needing to limiting their expenses to. This is an automatic process but it can be customised through the settings. Should the system project costs will exceed this goal based off current usage rates, the utility widget will be flagged in red, and the amount over the goal is highlighted as money lost. Otherwise it maintains green and instead highlights how much money is saved.



AVATARS AND CUSTOMISATION



Inventory Page



Avatars and Pets

Casa possesses an incredibly dominant aesthetic quality, riding on video game elements to produce a visually stimulating experience. This is necessary as to deviate from other utility management tools in the market which are solely analytical. Members of a household, their home itself and pets can be realised through Casa. Self-expression is wholly supported through customisable avatars, screensavers and house decors. Likewise, animation plays a prominent role here in constructing a dynamic interface that is appealing to view and engage with. It is therefore highlighted as a core function.

HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE

The prototype can be viewed on any device that can access Figma. However, the prototype was designed for a 1097px x 741px display. In particular, we used the The Microsoft Surface Hub 85 as the basis of our prototype iteration.

4GB RAM
Quad Core Processor *< Minimum Hardware Specs*

SOFTWARE

Figma 116.14.7
Windows 10 or Higher *< Recommended Software Versions*
MacOS X 10.4 or Higher



SET UP INSTRUCTIONS

- 1 Open a web browser on a desktop screen.
(Successfully tested on Google Chrome and Safari)
- 2 Access the Figma file using the link or QR code and press the play button.
- 3 When interacting with elements, 'long press'
(approx. 2 sec) to allow for complete animation.

QR CODE TO
PROTOTYPE



LINK TO PROTOTYPE

<https://www.figma.com/file/X4bxbj5wmljIKosaLoqiil/deco3200-final?type=design&node-id=0%3A1&mode=design&t=yjzZIAUu9BysC0bf-1>



KNOWN ISSUES

Known issues of the prototype can be visual glitches that occur between animations. For example, opening the Rewards or Challenges page causes the shop icon in the top left to appear green before returning to normal. This does not affect functionality.

All avatars and pets are intended to be moving and animated all throughout. Figma however pauses all components during animation transitions between pages. It is therefore a limitation of the software, and it should have no effect on functionality.

In the inventory page, when attempting to drag the batman mask onto Jacob, the drag input may glitch and not work entirely. If this occurs, you may restart or press the right arrow key once to skip it.

There are many opportunities to vertically and horizontally scroll in the prototype. If something appears to be scrollable but can't, you may attempt to zoom out completely from the prototype and try again, or just restart it to resolve it.

FUTURE WORK



Despite our Casa already embodying our core vision, even as a prototype, there are still opportunities for additional features that can be realised in future versions.

An incredible depth of utility information can be exploited to its full capacity as their own. We envision electricity, water and gas utilities as having their own pages to display detailed breakdowns of usage. This would widen the market scope of Casa to users who may benefit more from getting to assess their own usage.

Another avenue that would elevate the experience is incorporating more dynamic animations that can showcase changing conditions i.e weather.

A future version will benefit greatly with a dedicated onboarding process that demonstrates clearly how Casa is integrated into a home's utility system. This will likewise clearly define the stages of creating one's home and avatars.

We envision an opportunity to extend the principle of Casa outside of shared living spaces and into shared commercial or business spaces. A future version may thereby incorporate more buildings and host more avatars.

BIBLIOGRAPHY

Statements in this report are informed from user testing conducted by ourselves.