



FIRST Innovation Challenge

OnyxTronix #2231

Israel | 2021

EasyBusy



PRESENTED BY Qualcomm

EasyBusy - the loneliness of elderlies

A device that provides meaningful occupations to seniors facing loneliness



Table of Contents

Introduction	3
Team Description – OnyxTronix #2231.....	3
Public Project Description	4
Problem Description.....	5
Solution Description – EasyBusy.....	6
Supplemental Documentation	8
Description of the Solution's Design Part 1.....	9
Description of the Solution's Design Part 2	10
Description of the Business Model Part 1	12
Description of the Business Model Part 2.....	15
EasyBusy's Branding	18

Additional Materials:

The additional materials can be found on [OnyxTronix #2231 team website](#):

1. Pitch Presentation.
2. Product presentation.
3. EasyBusy's animation video – available to watch also [on YouTube](#).

Animation Video



Team Website



Introduction:

In this document the outcome of OnyxTronix #2231, FRC team from Israel is presented for the *FIRST* INNOVATION CHALLENGE for the 2021 season.

The team was chosen to be one of the 116 teams that qualified to be "Semi-Finalists" out of 777 teams that opt into this at-home challenge.

FIRST INNOVATION CHALLENGE – *FIRST* Robotics Competition 2021

In this challenge, each team needs to choose a health-related problem and design a product to solve said issue. Along with the product, teams must provide a business plan for it, and back up the products' value with research.

This challenge is one of the *FIRST* At-Home Challenges the teams could opt into so that they could work remotely while the during the COVID-19 outbreak.

Team Description – OnyxTronix #2231:

OnyxTronix #2231 was founded in 2006 in Shoham, Israel. As for the 2021 season, the team consists of mentors, alumni and 32 students, girls (yearly average - 50%) and boys, from 10th-12th grade.



The team is divided into 4 divisions; Mechanics, Control (software & electronics), Strategy and Community & Marketing. This year, an additional sub-division was formed - the Innovation division.

Since 2017 the team has been part of the Israeli expedition to the world championship and manufacturing 98% of its robot parts independently.

The team's community involvement focuses on spreading STEM, women empowerment, activities with people with special needs and environmental quality activism.

In December, after winning Hackathon 2020, the team, cooperating with FIRST Israel, arranged a national competition for all the teams in Israel called "A-Part of *FIRST*".

OnyxTronix acknowledges the importance of everybody developing themselves and reaching self-fulfillment and is willing to improve, learn and grow in the future.

Public Project Description:

The project focuses on a problem from the mental health field - loneliness among elderly. It is a common global phenomenon with serious consequences, just in the US, 40% of the elderly suffer from loneliness. Therefore, EasyBusy was invented. Its goal is to minimize the amount of lonely elderly in the world by giving them a way to deal with their loneliness independently.



EasyBusy is specially designed for elderly, by its unique UI and content; 5 tasks in 5 different categories are provided on a daily basis in order to keep the elderly active, based on the understanding that activeness decreases loneliness among elderly.

Moreover, the device supplies a daily monitor question system, which is inspired by the UCLA loneliness scale, as well as simple access to articles and videos.

EasyBusy is expected to have a significant impact and become an inseparable part of millions of people's lives.



Problem Description:

As for 2021, the world population consists of nearly 8 billion people, roughly 9% of them are elderly (65+). One of the most common and critical problems the elderly suffer from is loneliness. According to "The Experience of Loneliness", "Loneliness occurs when a person's network of social relationships is less satisfying than the person desires". When applying the 'De Jong-Gierveld Scale', one of the main scales to measure loneliness, a significant association between age and loneliness was found; the older, the lonelier (Nicolaisen, Thorsen, 2014).

Moreover, researchers have found that loneliness correlates with a subsequent increase in symptoms related to dementia, depression, and many other mental and physical issues - even life-threatening. In fact, the study "Loneliness, depression and cognitive function in older U.S. adults" has shown that "loneliness significantly predicted worsening cognitive function independent of socio-demographic factors, social network, poor health and baseline depression."

The average number of elderly people who self-reported as lonely out of 15 countries surveyed is 39%. In Israel, the percentage of loneliness was the second highest, 48% - one in two elderly consider themselves lonely. As reported by Patel and Clark-Ginsberg (2020), by reducing in-person social interactions in the name of physical distancing, the COVID-19 is expected to increase loneliness among elderly. Not only is it expected to be affected by the COVID-19 pandemic, but it is also already in an upward trend: according to the insurance company Cigna, between 2018 to 2019 there was a 13% increase in loneliness among the elderly. This trend has remained and is worsening as time goes by.

Most of the current solutions available are social groups suggesting lonely elderly to connect with other elderly in a similar position. Dana Weiss,

researcher, said that after interviewing a range of elderly, her team has found that young elderly fear of the stigma comes when admitting they're lonely. Therefore, it can be assumed that the social groups' solutions might not be relevant for many.

Furthermore, Michal Friedntal, social worker, said that there is a population of lonely cognitively functioning elderly, which face technological difficulties, which bar them from using many devices daily.

Solution Description – EasyBusy:

EasyBusy - a device that reduces loneliness among elderly. The device provides activities and motivates elders to be busy, based on the understanding that being active during the day lowers the chances of someone being lonely. NHS,



the United Kingdom National Health Service, states that filling time doing enjoyable things, can stop people from focusing on feelings of loneliness, and is good for their well-being. Every day, five TASKS will be given in five CATEGORIES: sports, cooking, cognition, social and creativity.

The CATEGORIES suit a variety of interests and decrease loneliness in different ways.

1. A study from the German Sport University has found that *physical activity* leads to a significant reduction of loneliness .
2. According to the British Dietetic Association, malnourishment is a great risk when dealing with loneliness, therefore it is important to incorporate healthy meals in the diet of a person struggling with loneliness. With that, cooking is a common hobby among elderly, and since MHF stated that doing cherished hobbies helps to fight loneliness , EasyBusy has a *cooking* category.

3. Researchers in UCLA concluded that partaking in meditation and other *cognitive* tasks can reduce loneliness within a short period of time.
4. According to the American Psychological Association partaking in walks outside in nature can help fight a poor mental state.
5. Doing artistic and *creative* activities can assist in combating social isolation and loneliness (Hong, Hibberd, 2018).

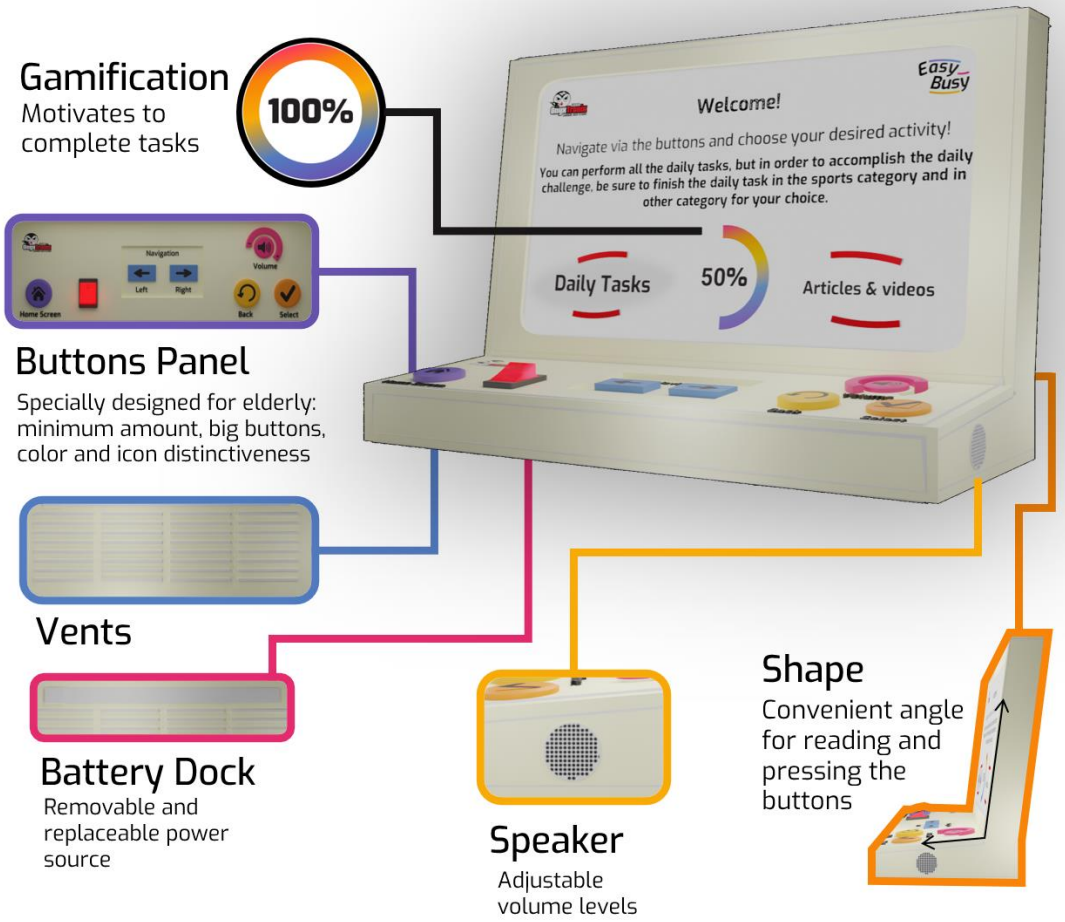
Users complete the DAILY CHALLENGE by doing the sports' daily TASK, and another daily TASK from a different CATEGORY of their choice, or completing all five TASKS. According to Pels and Klienert (2016) partaking in physical activity reduces loneliness, therefore, the daily sports TASK is necessary. Moreover, gamification, such as daily challenges, is used to motivate users according to Richards, Thompson and Graham (2012). The device provides simple access to various articles and videos, as well as a daily monitor questions system, inspired by the Scale of Loneliness UCLA, that can share the data with professional organizations. Furthermore, the device is user-friendly, mobile (working on batteries), lightweight and is operated by seven big physical buttons.

Supplemental Documentation:

EasyBusy



EasyBusy helps lonely elderly deal with their loneliness on their own by supplying a variety of daily tasks, simple access to media, being physically active, aware of their situation and receiving personal assistance.

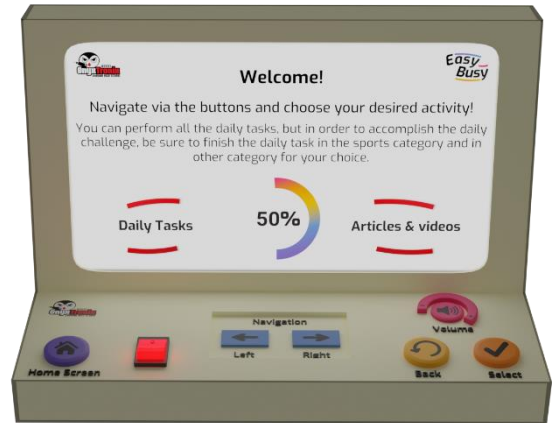


Description of the Solution's Design Part 1:

EasyBusy was developed while keeping in mind its target audience.

Fridental emphasized that many elderly she works with are facing difficulties in the technology field.

EasyBusy consists of an attractive buttons panel that suits especially to elderly. We developed a few optional layouts for buttons and consulted with experts and potential users until the final version was chosen. According to conversations with elderly, fewer buttons are simpler to use, thus, EasyBusy has only 7 big physical



buttons that are distinct from each other by color and icon.

In addition, it is characterized by its friendly design. A research from Mälardalen University, has shown that "Single task per page reduces attention load for elderly". Therefore, EasyBusy is designed with minimum on-screen content, as Weiss said: "As for the appearance sketch: excellent! It looks very accessible and simple to use."

Furthermore, it is mobile, colorful, comes in different languages, contains gamification effects and choice possibilities, supplies direct access to articles and videos and its screen and panel are tilted in convenient shapes.

EasyBusy will be packaged with a guiding book containing explanations and illustrations that will be shown in big font and page size.

Most importantly, EasyBusy is reliable - it is always there.

Description of the Solution's Design Part 2:

EasyBusy is an electric device - it will operate on a battery, allowing the device to be mobile. The device has technological add-ons, for instance, a speaker for hearing the videos with a dedicated button to control the volume and vents at the bottom of the device.

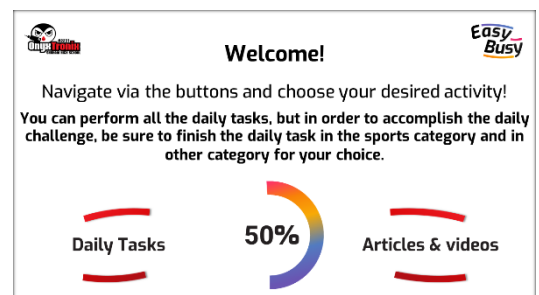
EasyBusy will be assembled from an arduino controller (with a WIFI component), 7 big buttons, a memory card and a screen. An app will be run, and the device will be covered with a colored bent tin.

The arduino controller imports the daily tasks from a database programmed in SQL. The database will be updated by the company every month with new daily tasks, videos and articles. In addition, the answers for the daily questionnaire will be kept in the database by the device's ID and transmitted to the relevant organization.

The screen displays an app that is navigated by the buttons. The outer case of the device will be made by bending colored tin custom-designed to allow future installment of the various components of the product. The device as a whole will be designed in solidworks.

A visual model of the device was created by the team in "blender" for several purposes; first, for the team to visualize the design. Second, to showcase it for the elderly target audience and receive feedback from them. Third, to showcase it for the experts to review and give advice for improvements .

Another way created to display the device is an illustration of its screen. At first we made an animated Hebrew version in Powerpoint, and improved it over time in the appearance and content as well as created an English version.



During the development process, we consulted about the way the device will be built with our mechanics mentor, Sagi Froylich, 2 experts from the IAF,

Denis Shtefan and David Alkaher and alumni from our team, Nimrod Machlev and Oded Moyal. With their guidance and assistance, we understood the optimal structure and the recommended communication possibilities. We also made calculated decisions whether to use a screen or a tablet, which controller to use etc. Moreover, we thought and researched the best material for the cover of EasyBusy, finally, we chose tin because it is the cheapest and we had a good experience with it.

To demonstrate one example from the design's course, is the process of choosing the buttons panel. It was a dynamic process where a few options were made. The first layout focused on minimum technological actions by the elderly since we understood they may struggle with it. This layout included a button for each category. After a discussion about the layout, we realized that there were too many buttons on the panel. The second layout focused on multiple roles for each button. This layout was rejected because it was complicated. The chosen layout had navigation buttons which saved many buttons. Another feature is the 'Home Screen' button - at any time there is a possibility to return to a familiar place.

Description of the Business Model Part 1:

In order to implement EasyBusy, there are 3 factors which are taken into account: **key partners**, **key resources** and **key activities**.

Our **key partners** will work with us for a common goal and support our product. Starting with software, mechanics and electronics experts for refining the device, continuing with investors and sponsors for initial investment towards mass production which will be done with assistance from production manufactures. Later on, reseller companies, healthcare centers and HMOs will sell and supply EasyBusy to the customers. While the device is on market, welfare organizations and researchers will analyze the data collected in the daily monitor questionnaire system .

The **key resources** are divided into 3 groups: physical - tasks' stock for each category, components for the device, access to a variety of videos and articles, human - heads of divisions, such as media, tasks' replenishment and customer service, and financial - first production funding and marketing.

The **key activities** are completing the development of EasyBusy and preparations towards marketing the device and for the first launch. The key activities are connecting the key partners and the key resources. For instance, contacting potential partners towards production and setting up teams for the maintenance and development of EasyBusy. Each of these consists of more specific sub-activities, like product reviewing and testing with customers, and each of the sub-activities has an action plan.

KEY RESOURCES

Physical Resources:



- Components for the device
- Stock of daily tasks for each category
- Variety of articles and videos

Human Resources:

- Media and branding responsible: social media & website
- Technical Support Representatives
- Responsible for replenishment of tasks

Financial Resources:

- Initial investment for buying all the components up to first income.

KEY PARTNERS

- Sponsor for initial investment
- Production manufactory
- Software, mechanics and electronics experts
- Healthcare centers and HMO
- Reseller companies

KEY ACTIVITIES

Developing EasyBusy:

- Finishing develop the app
- Making branding guide
- Verifying the integrity of the technical formation of the device
- Product testing – product review by variety of elderly
- Making a stock of daily tasks for 2 month for each category

Before Mass Production:


- Contacting with mass production manufactories
- Contacting with suppliers
- Marketing EasyBusy to resellers companies
- Contacting with healthcare centers regarding the daily monitor question-system

After Mass Production:


- Set up a team to maintain the device
- Set up a developing team
- Set up a team for tasks and content replenishment
- Learning the impact analysis

The way EasyBusy is purchased is in B2B2C format - Business to Business to customer, to reach every potential customer. The first business, us, sells an idea and product units to a second business which sells or gives the product to the customers. This model is suitable for EasyBusy: the first business benefits from a wide variety of customers it wouldn't reach on its own, the second business offers an innovative solution to a burning issue for its clients, and the customers benefit from a convenient and optimal access to a solution that addresses their needs.

Target Customers



B



2

B

Healthcare organizations and businesses

2

C

People over the age 65 who suffer from loneliness

*8% of the world population
632 million*

Whereas the UK spends 836\$ a year for one elderly and other competitive products on market cost 1500\$-6000\$, EasyBusy's production cost is 162\$. It's a significant difference that will make solutions for mental disorders people, particularly elderly, much more accessible in terms of price.

According to a study published at Harvard Business Review, "Pricing and Psychology of Consumption", consumption closely follows the timing of payments. Thus, EasyBusy's payment will be done monthly as a subscription renewal. For the first half-year, the subscription will be monthly mandatory in order to cover the manufacturing cost, approximately, 30\$. After this period, the payment decreases to 10\$ a month, as long as the user paid - the tasks, videos and articles are renewed, and the daily monitor question system is remaining active.

As for manufacturing, we have the resources and knowledge to produce a few units in terms of mechanics, electronics and programming. Initially, we will be able to supply EasyBusy for lonely elderly and after it will gain positive reviews, we could start with mass production.

Description of the Business Model Part 2:

The main issue regarding loneliness among elderly which EasyBusy deals with is inspired by Eyal Kahalni, director of the Social Services Department in Ramla: "they have a lack of meaningful activities to pass the empty hours of their day."

The logical and physical structure of EasyBusy fits the elderly needs and convenience. It has been designed, improved, changed and chosen with experts like Dana Weiss, a researcher from Myers-JDC Brookdale Institute, Michal Fridental, social worker at Shoham, and with a variety of elderly we reached through an explanation video and flyers.

Furthermore, the questionnaire was also built together with Weiss and was praised as well as the gamification: "Great idea! The daily challenge, like a competition of the elderly with himself."

Besides, Tamir Rave, business development and strategy advisor, and David Alkather, CTO & Innovation leader, IAF Unit 108, assisted with the business model; developing the marketing method, evaluating costs etc.

Description of the Innovation Impact:

EasyBusy reduces the loneliness level of elderly, but its impact is much broader than that - EasyBusy makes lives better.



Firstly, it solves a global issue and gives a solution to a broad population section, just to exemplify, to more than 40% of the elderly who live just in the U.S .

EasyBusy will directly address the elderly' needs, inspire and motivate them to be active while preserving and improving their cognitive and physical abilities. Moreover, the elderly will be able to analyze their loneliness situation over time, and most importantly get individual treatment. By doing that, EasyBusy will decrease their chances to suffer from loneliness. "The quality of life decreases along with an increased feeling of loneliness"(ARSLANTAS, ADANA, ERGİN, KAYAR, ACAR, 2015). Hence, it's likely that a reduction in the loneliness level will improve life's quality. Thereby, EasyBusy has the ability to improve millions of elderly' lives around the world. Even our testing group has testified that EasyBusy will surely have a positive influence on many lives.

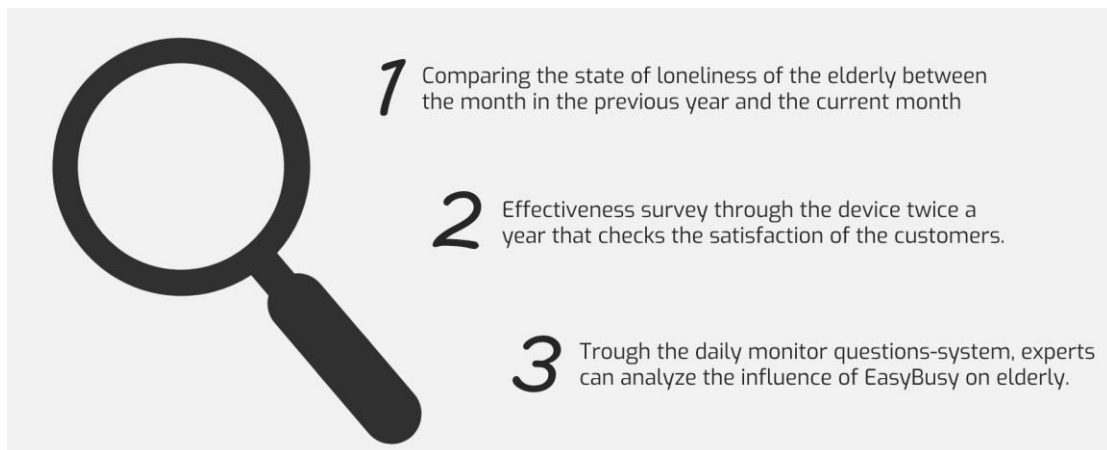
Secondly, their hours will be filled with meaning thanks to EasyBusy. Another significant conclusion from the previously mentioned article is that hobbies increase communication with the social environment. In light of this statement, the elderly will be able to connect and create social relationships based on the hobbies they have developed while using EasyBusy. Thus, impacting from another aspect directly on the elderly and resulting in higher self-esteem and confidence.

In fact, by reducing loneliness, EasyBusy decreases the likelihood of suffering from loneliness' consequences, therefore, the expenses of each country for treatments for loneliness and its consequences will be affected and reduced. Furthermore, by using EasyBusy, lonely elderly will be able to help themselves independently and won't need to rely on someone else (as opposed to group treatments). In addition, EasyBusy addresses loneliness from many different directions. Therefore, the device has a potential to adjust itself to any elderly, which increases the number of people that can be impacted by it, compared to

other existing solutions. Additionally, EasyBusy might reach an even bigger audience because of its technological simplicity.

Not only will it have an influence on the elderly themselves, but it will also have a great influence on doctors as well as researchers by all the data collected with the elderly' consent. EasyBusy has two functions - treat loneliness, and monitor loneliness providing the caregivers match a proper qualitative treatment in case one is needed.

EasyBusy impact can be measured initially and over time according to a comprehensive plan. Monthly, the status of loneliness will be calculated according to the elderly responses and will be compared to the corresponding month in the previous year. An effectiveness survey that checks the satisfaction of the customers will be conducted twice a year, and through the daily monitor questions-system, experts can analyze the influence of EasyBusy on the users. In business, the impact can be analyzed according to the sales trend. All the information gathered will create a full picture that can be learned by.



EasyBusy's Branding:

EasyBusy has a unique branding. Those can be downloaded from [OnyxTronix #2231 website](#).

Logo - dark:



Logo - bright:



Color Palette:



One color logo - dark:



One color logo - bright:

