

AQUASENSE



Life - saving solutions

Student Company Report



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Itzhak Navon Junior high School 2019 | 2020

1 Executive summary

Mission

We are in the business of saving lives. Our mission is to save the lives of young children by eliminating the danger of accidental drowning. Drowning is the No. 1 cause of death among little children. We are a group of 14-15 year old entrepreneurs that wish to create a significant social impact in tandem with building a profitable business venture.

Vision

Sigma envisions a safer world with a significant reduction in drowning cases among little children in private and public swimming pools.

Sigma was founded and operates around a set of core values and principles that define everything we do:

Social / Environmental Impact

We strive to do business while doing good. We will always seek to balance the business needs with those of society and the environment.

Entrepreneurship and Initiative

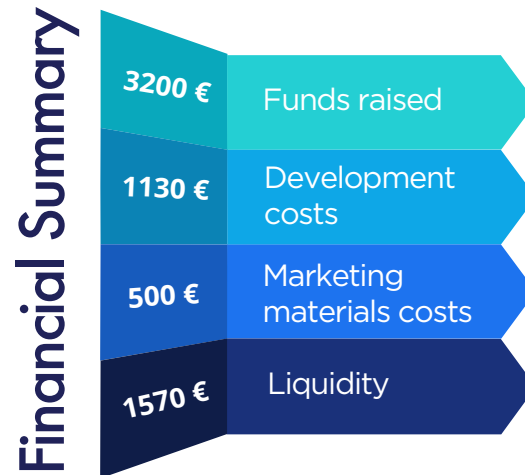
Every member of Sigma is encouraged to take part in the initiative and contribute to the team and the business.

Hands - On Learning

We believe in experiential learning and learning through examples

Teamwork

We put the business interests of the company and the team members above our personal interest.



October

Company funded

January

Proof of concept

May

Regional champions, municipality 1st agreement

December

Idea screening

March

Prototype

June

National champions

Product

AquaSense is a smart bracelet designed for children that recognizes and alerts when a child is in danger of drowning.

The smart bracelet is equipped with built-in water and vibration sensors combined with an advanced algorithm capable of recognizing the various positions and movements of the wearer, and indicate danger of drowning. When danger is recognized, an alert is sent to an extra-loud speaker, to the parent or caregiver's cell phone, and to emergency services, enabling immediate response and the best chance of saving the child's life in time.

Strong need - drowning is the no.1 cause of death among little children.

Easy to use - the app automatically alerts in case of danger.

High quality- components built to last.

Up to date - constant remote updates and upgrades

Low cost - our product is priced lower than most competing products.

Our First Year at a Glance

Looking back, we are proud of our strong achievements. From a group of 18 9th-grade students from 5 different classes, we managed to form a strong team that worked together to deliver a product that has a tremendous impact - saving lives. Our product has received numerous praises from experts in the field and from potential customers. During the process we underwent personal development and gained a variety of business, financial, marketing and entrepreneurial skills that will serve us in the future.

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2 The Product

The Product

SIGMA has developed The AquaSense system, a combination of a smart bracelet with an embedded receiver and a proprietary app - in order to save lives. The bracelet contains both a water sensor and a vibration activation switch that can detect cases of drowning. The receiver receives a radio wave signal and transforms it into a cellular signal. The app receives a signal of distress and notifies both the parent/s of the bracelet wearer as well as other emergency contacts of choice (lifeguard, EMS, etc.) How does it work? As soon as the bracelet touches the water or detects a lack of movement, an alert is triggered and sent to the app. The app has multiple functions - data collection, accessibility, alerting and mobility. The app allows the owner of the bracelet to include important information about the child's medical history, age, neighbor's phone numbers and more. Thanks to the app, the system is completely mobile and can be used anywhere - at a friends' house, public pools, the beach and more.

The product fits perfectly on the child's wrist and cannot be removed by the child thanks to a safety lock. The app is suitable for both IOS and Android phones and will be free to download from the App store and Google Play.



Water Sensor

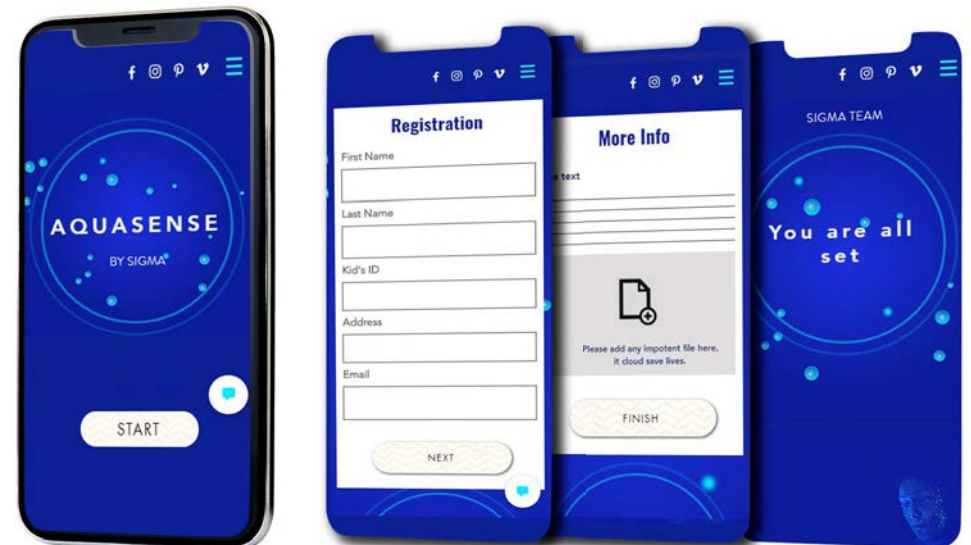


Vibration activated switch



Standards and Regulation

To ensure regulatory compliance and enable international expansion, we chose suppliers that have obtained regulatory and standard approval for their products around the world in general, with an emphasis on US & EU compliance in particular.



3 The AquaSense Impact

Taking on a Global Problem

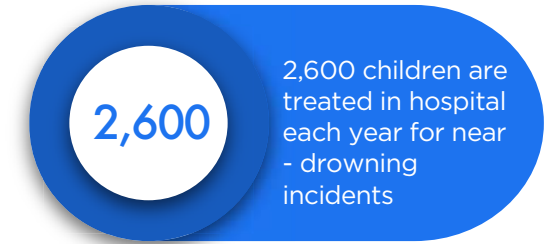
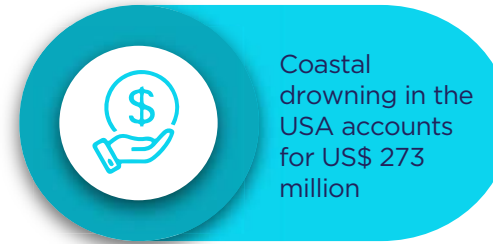
Drowning is the leading cause of accidental death among children worldwide, after motor vehicle accidents. 800 children die every year from drowning, Over 50% are under 5 years old.

2,600 children are treated in hospital emergency rooms each year for near-drowning incidents. Some of these submersion accidents result in permanent brain damage. Age is one of the major risk factors for drowning, often associated with a lapse in supervision. Globally, the highest drowning rates are among children 1-4 years, followed by children 5-9 years. In the WHO Western Pacific Region children aged 5-14 years die more frequently from drowning than any other cause.

Coastal drownings in the United States alone account for US\$ 273 million in direct and indirect costs each year. In Australia and Canada, the total annual cost of drowning and drowning-related injuries is US\$ 85.5 million and US\$ 173 million respectively.

Fatal child drowning rates per 1,000,000 population by age and sex worldwide

	Under 1 year old	1-4 year old	5-9 year old	10-14 year old
Boys	64	78	83	93
Girls	98	49	40	38



Social and Environmental Impact

Our main impact is preventing drowning and saving lives among children. The financial toll of this issue on society and the environment is billions of dollars in medical costs. The emotional impact of lost lives, severe injuries and families torn apart cannot be monetarily quantified. Thousands of families are destroyed every year in one tragic moment, which now can be prevented.

Giving Back

One of our major goals as a company is to give back to society. This begins with our product, which is aimed at one of the most noble causes of all- saving kids' lives. When we promote and sell our product, we are not just doing business - we are increasing awareness to a major issue and helping prevent it.

4 The AquaSense Impact

Product development was no doubt the most challenging yet rewarding part of the Sigma experience. During the process, we learned major issues in entrepreneurship, business, finance, marketing, and production. On several occasions, our problem-solving capabilities (as well as our blood pressure) were tested to the max.

Finding a Needle in a Haystack

AquaSense was chosen from over 100 ideas. We started out with several brainstorming sessions in class, as well as with a student-parent evening session. The only restriction was that each suggestion had to be a problem worth solving. We also gave strong preference to ideas that had social/environmental added value impact.

After a lengthy process of elimination, we reached a short list of potential ideas and by that time, most of the group was enthusiastic about the AquaSense idea. To validate our decision, we reviewed many research reports online, and conducted a study of our own as well.

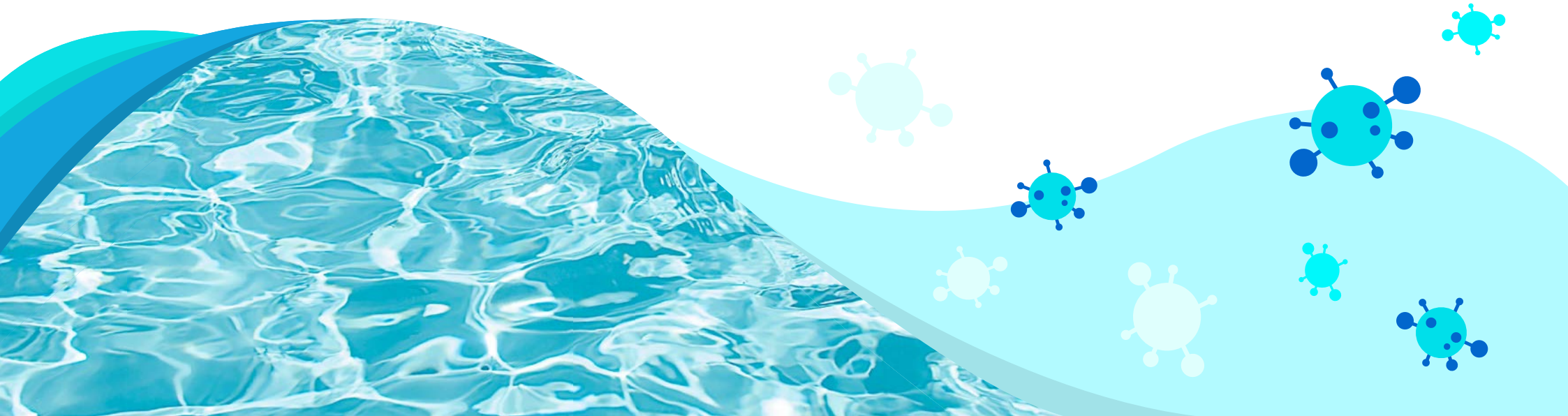
Once the AquaSense idea was selected, we explored several different options of how to realize the idea into a product.

COVID-19

During the Corona quarantine, we faced a dangerous and fragile situation and how important it is to keep ourselves and our loved ones safe, thus realizing that caring for ourselves and our family has to guide our actions.

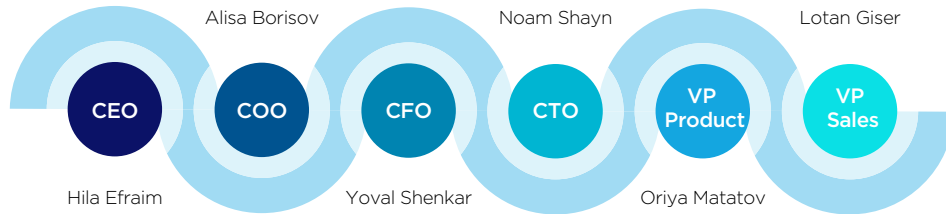
The Corona Challenge

The great difficulty lied in the fact that we did not have the opportunity to meet and decide as a group. The second difficulty was managing expectations. From the very first moment we aimed high, it was clear that despite the difficulty and the challenge we undertook, we would reach the regional competition with a completed product. The fact that most of the activities around world were practically shut down, prevented us from contacting potential producers and postponed the production date until now.



Company Structure and Operations

SIGMA was founded and managed by a group of 18 9th-grade students, each of them is a shareholder in the company. In the beginning of the year the company elected its executive officers from among all shareholders. Each manager was responsible for coordinating and leading his/her area of responsibility, with the other students joining different teams based on their desire, areas of strength and capabilities. The members of the management group are:



It is important to note that each group had a wide degree of autonomy in advancing their assignments. Major issues concerning the company were brought up during board meetings, and the shareholders voted based on the various alternatives presented. At this point it was decided not to pay salaries, and the shareholders will receive dividends from future revenues.

Target Audience and Customers

AquaSense aims at broad target audience. Basically, our target audience is comprised of parents of young children under the age of 9, with an emphasis on those who own private pools. We believe that within our target audience, our low hanging fruit lies in the U.S. market, where the economy is strong and the percentage of households with private pools is significantly high. In California for example, more than 11% of the houses own private pools.

Our Competition

Other devices currently on the market fall into two major categories, each with shortcomings our device aims to overcome. The first category contains devices installed inside the pool, such as cameras and motion sensors, which are expensive and complicated to operate. The second contains wearable devices, which are limited to a 30 meter range, and are unable to share any data.

Disadvantages of Competition:



Complicated to handle

Require complex setup and operation



Lack of important DATA

Do not collect or store any transmittable data.



Expensive

The prices of all our competitors' systems exceeds 100 Euros (our price is 80 Euros).



Not adjustable

Cannot be customized according to the child's specific age and behavior.



Not mobile

Stationary. Cannot be transferred between locations.

Channels - The Big Opportunity

Following the Corona Virus outbreak and the sharp increase in online shopping, we decided to operate on a B2C model, focusing our efforts on online marketing and promotion. At present we are currently working on establishing an online store on Shopify, as well as in Amazon U.S.

Our chosen business model will enable us to sell our product directly to consumers at a very affordable and competitive price, compared to the alternatives on the market. We plan a consumer price of less than 80 Euros, while all our competitors are priced at above 100 Euros.

Our estimated cost of production and shipping is about 30 Euros. Thanks to our healthy price structure and margins, we plan to re-invest 25% of the revenues from each product, i.e. 20 Euros, in marketing and promotions.

Our enquiry indicates that the average cost per click on our online ads, will be around 0.2 Euros. Therefore, if we manage to maintain a conversion rate of 1%, we will still have a healthy operational profit of 30 Euros or 37.5%. We will focus our promotional and advertising activity on influential and high socio-economic areas, like upscale neighborhoods in California and Florida with an abundance of private swimming pools. Our main promotional platforms will be Facebook, YouTube, and Google.

Good Old Traditional Media

We had items on 3 different occasions on national TV and are scheduled for further presentations for the next few weeks. We've also been featured several times in national and regional newspapers. This has promoted to a great extent our exposure to a broad audience, and increased the traffic to our online assets. An additional benefit of exposure on public media is the opportunity to deliver the significant and importance importance of the issue.

Social & Online media

We will put a strong emphasis on social media, promoting the company and our solution on Facebook, Google, YouTube, Twitter and our website. In addition, we received several strong institutional leads, including Canada-Israel, a large residential enterprise and hotel company in Israel and the Rishon-Lezion municipality, which has a population of over 300,000 residents. We are working together with their PR team with the aim of raising awareness about our company and product.

On top of that, our marketing team is managing our Facebook and Instagram pages daily, making sure we have as many followers and engagements as possible.



7 Finance and Results

We believe that throughout the work on the project we have already created an impact on public opinion concerning this important issue. There is an ancient Jewish saying, “anyone who saves a single life, saves an entire world”. We hope we have already contributed in saving lives, and plan to continue doing so in the future. We have delivered our messages to hundreds of thousands of people in Israel and in the same time have presented the issue to parliament members and legislators.

Finances

Our share capital was 246 Euro, invested by the student shareholders in the company. In the first few months, we increased our capital by selling various products (e.g., home cakes, sandwiches, soft drinks etc.), raising additional 520€. We used this money to produce professional marketing materials such as promotional video and designed ads.

These marketing materials have been the cornerstone of our crowdfunding campaign, in which we raised a total of € 3200.

COGS and Pricing

Our COGS depends on the number of units produced and will decrease with quantity. However, beyond 10,000 units, the price change is insignificant. We incurred a 1-time cost of 582€ for developing our app.

	100 Units	1000 Units	10000 Units
Consumer Price	79.90€	79.90€	79.90€
Production Cost	30€	25€	22€
Shipping Cost	2€	2€	2€
Delivery Cost	3€	3€	3€
Online Marketing	20€	20€	20€
Profit per Unit	29.90€	34.90€	37.90€

Profit & Loss Account

Profit & Loss Account		Euro
A	crowdfunding campaign	3,200
B	Purchases	470
C	Production Wages	1,520
	crowd funding cost	250
D	Closing Stock	—
E	Cost of Sales	2,240
	Gross Profit	960
F	Salaries, commissions and bonuses	—
G	Stationary	40
H	Rent & Hire	—
I	miscellaneous Expenditure	120
J	Registration Fee	—
	Total Expenses	160
K	Gross Profit Less Total Expenses	800
L	Miscellaneous Income	520
M	Net Profit or Loss	1,320
N	Corporation Tax Payable	—
O	Profit after Tax	1,320
P	Appropriations of Profit	1,320
Q	Dividends	1,320
R	Donations	—
S	Others	—
	Balance	—

Balance Sheet

Balance Sheet	Euro
Current Assets	
Stock	—
Debtors	—
Cash at Bank	1,570
Cash in Hand	170
TOTAL CURRENT ASSETS	1,740
Less	
Current Liabilities	
Bank Overdraft	—
Loans	—
Creditors	—
corporation tax payable	174
VAT Due	—
TOTAL CURRENT LIABILITIES	174
BALANCE	1,566
Represented by:	—
Issued Share Capital	—
___X___ shares at ___0.00___	246
Profit & Loss Account	1,320
Shareholders Funds	1,566

8 Challenges

It was clear from the start that tackling such a major issue will confront us with difficulties and challenges. Throughout the process we have learned much, both from our achievements as well as (and often even more) from overcoming obstacles along the way.

Can't be Done (Especially by You)

One of the first things we heard from the adults around us was that we were fighting an uphill battle; "It's an ever growing problem with no solution" and "much bigger players than you are trying to solve this issue without too much success", where just some of what we have been told.

Whenever some team members felt discouraged, the others stepped in to motivate and put everyone back on track. Every new challenge we overcame, (like the difficulty in finding the right developer), contributed to our confidence and helped us keep our eyes focused on the goal.

The Power of Expertise

Even though some of the group members possess technological and development know-how, we quickly realized we cannot do everything by ourselves, nor should we. Part of our experience was reaching and engaging the right experts to help us along the way. We received many free advice and assistance from people we reached out to, that helped us to decided to hire the right professional developers.

Cash is King

This was one of the first things we were told and learned time and again. We had to get creative and exploit every opportunity to raise money for financing the development and production of the product. We consciously decided to switch to more expensive product and software engineers to ensure the best quality available. Since every market confronts competition we have to be the best one in order to win it.

Current Issues

We have not yet overcome all the obstacles and there are new ones on the horizon. Our solution does not have IP protection because of our lack of financial capability to achieve this expensive goal. We are working on submitting a provisional patent and raising money to retain a patent expert. Furthermore, now when we are no longer under the JA umbrella, we need to open up a corporate entity for further sales. This would also require a different cost structure due to taxes, VAT, etc.

	Problem	Solution	Lesson Learned
Product Development	Skepticism	Continuing until reaching a working solution	Learn to filter constructive criticism from skepticism
	Lack of tech knowhow	Enlist support of external experts and subcontract	No need to know everything. Collaborate when possible
	Finding suppliers	Internet research and talks with importers	By being thorough you maximize your options
	Quality of product	Identify issues as soon as possible and fix them	Be in constant contact with your developers and keep your finger on the pulse
S&M	Lack of trust	Gain media endorsement and collaboration of opinion leaders	It helps very much to receive professional endorsement as a source of authority
	Retailers are difficult	Opened up additional channels	Today you are one click away from opening your own store
	Marketing is expensive	Use alternative channels - especially PR	When you have an innovative solution or solve a major problem you are newsworthy and can get a lot of free publicity
Finance	Not enough money	Increase fundraising efforts and use crowdfunding	Focus spending on most important things. Find new ways to raise funds
	Not everything goes as planned	Work with unexpected / contingency budget	Always assume a certain degree of failure / problems that have financial impact, and plan accordingly
	Different cost structure for a non-JA company	Change price structure and supplier volumes to accommodate taxes, VAT and expenses of a real company	There are only two things in life that are certain - death and taxes

9 What's Next?

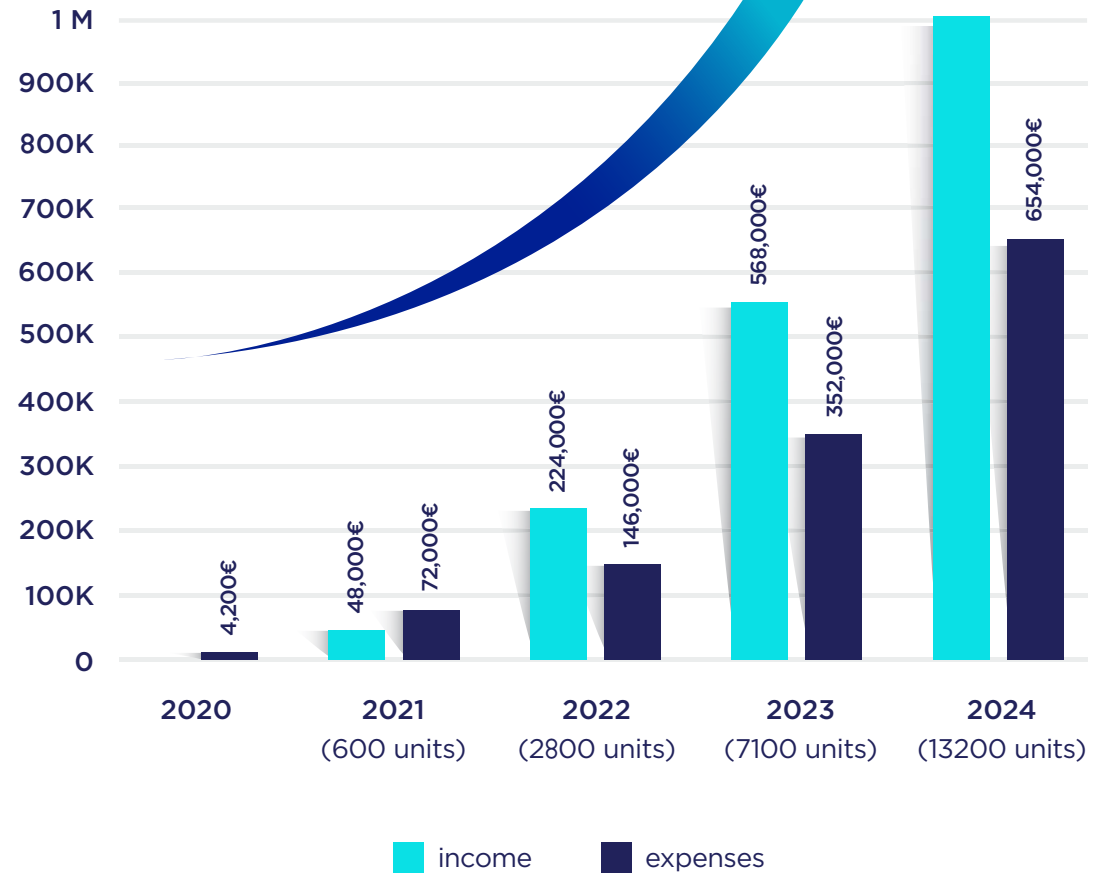
What's Next?

During our activity under the JA program, it was clear to us that we want to continue with our journey on our own after it's over. We are extremely proud of what we have achieved so far, and believe it can make a real difference in the market. In the next few months, we will start a new corporate structure that can account for taxes, VAT, etc. All the team members will be shareholders in the new entity.

We are in the process of preparing a business plan, to serve both as an internal roadmap for our future business, as well as a plan intended for engaging external investors and partners.

Concerning the product itself, we are looking forward to develop a smart receiver with the ability to analyze data from multiple sources. We expect this product to help us to conquer the huge market of hotels and public pools. In this regard, we have already established contact with two major design partners, (Israel-Canada Ltd and Rishon - Lezion municipality).

P&L



AQUASENSE



 www.facebook.com/Mabat-107356887579820

 www.instagram.com/mabat_makifyg

 www.youtube.com/watch?v=WzXV3rFwOJs

