CASE STUDY

# VARUNA

WATER SYSTEMS QUALITY
SENSOR NETWORK

HARLEM LABS

# PROJECT DESCRIPTION

Varuna approached Harlem Labs for support creating a water quality tracking platform.

This required a business strategy, model and prototype being developed in order to gain traction for the project.

Over the period February 2017 to March 2019 our team:

- Developed an Arduino prototype and defined the basic parameters of the software
- Researched and procured the appropriate materials
- Designed a business model optimized to enable achievement of the proposed client value.
- Defined an appropriate business plan to enable a successful fundraise and launch
- Supported sales growth and market engagement.

# KEY ACTIONS

## Industry Review:

We reviewed existing industry challenges preventing delivery of high-quality water to residents to better understand potential solutions.

## Technology Analysis:

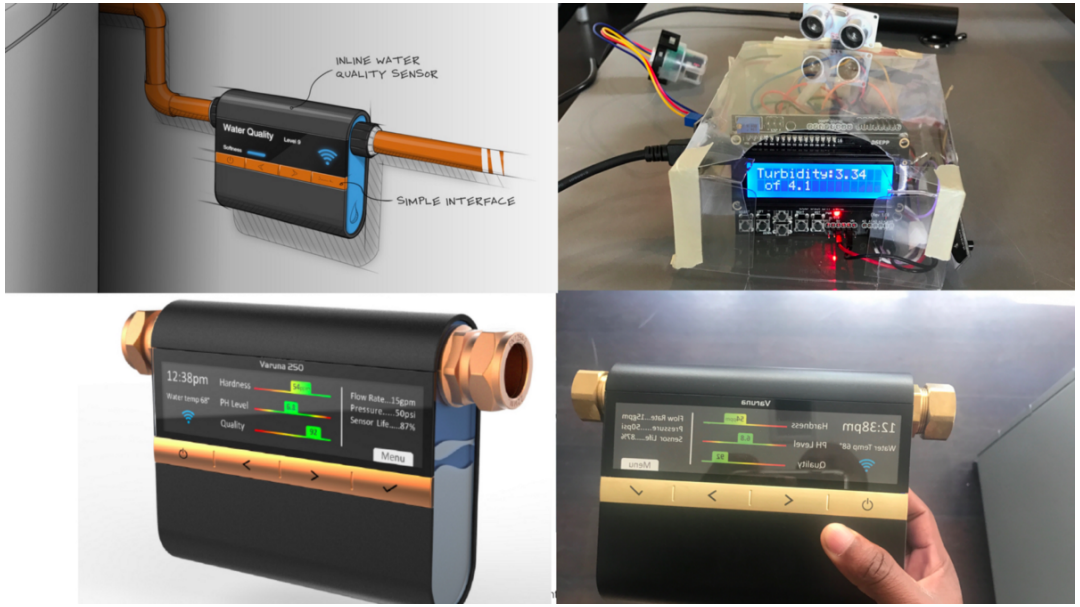
We researched and identified the optimal hardware (sensors) and cloud software setup required to provide long term reporting from field locations.

## Customer Segmentation:

We co-designed strategies that helped deploy the technology into the market through ideal partners and clients.

## Implementation:

We supported management through product development, fundraising and initial sales engagements. Our support continues through marketing and passive ownership in the venture.



# DETAILS

## Industry Review

- Analyzed the current challenges that utilities face in providing safe, clean drinking water to homes in key cities.
- Assessed alternate solutions, including using distributed networks of sensors
- Designed geographically dispersed sensor network using low energy use modules to improve real-time reporting

## Hardware Review

- Analyzed optimal hardware for field locations and designed prototype using the Arduino ide platform
- Designed prototype using 5 sensors reporting on temperature, turbidity, iron content, salinity and oxidation.

## Software Review

- Utilized the Arduino IDE to design software to test water and report readings.
- Supported in software mapping process to identify optimal technology stack for use in the final product
- Assessed additional reporting benefits the platform could offer in future iterations

During the project we reviewed utilities existing challenges in maintaining high water-quality. These findings led us to define a technology solution targeting water on route to client's homes.

Our final product improved remote water quality readings and reporting providing utilities the real-time info they need.

# EFFORT SYNOPSIS

We supported Varuna IOT in the development and deployment of their water quality technology. Our support was critical in bringing the solution to market.

Since launch the company has contracted with several US utilities and is now active at several locations. The platform design allows the introduction of new tracing elements and features which will come in handy as challenges with water security increase.

- Supporting utilities in reporting lead, iron, oxidation and salinity off-site.
- Improved awareness of key changes and locations within water stream that need to be addressed.
- Greater water security for utilities and the communities they serve
- Potential improvements that increase effectiveness of the system

# QUESTIONS?

Email us at: team@harlemlabs.com

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