



Innovate Now
Unlocking Human Potential

CASE STUDY

HOPE TECH PLUS



**SCALING ASSISTIVE TECHNOLOGY FROM
KENYA TO THE WORLD DISRUPTING THE
WAY PERSONS WITHOUT SIGHT MOVE
AND NAVIGATE THEIR WORLD**

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Hope Tech Plus Limited is dedicated to developing innovative technologies, building programs and tools for supporting inclusion in all sectors of society. They accomplish this by utilizing modern technology to produce tools that improve interaction with the physical environment and promote personal development.

The name **"Hope Tech"** was coined following a needs assessment meeting with persons with visual impairment who commented that they were grateful that the Founder, **Brian Mwenda** was giving them hope through technology.



BRIAN MWENDA
Founder, Hope Tech Plus

INTRODUCTION

PROBLEM

There are approximately 285 million visually impaired people (VIP) in the world. This is almost 5% of the total population and the number is on the rise. Existing innovations around VIP's include the white cane and guide dogs. Guide dogs are extremely expensive to maintain and are not accessible with less than 1% of VIP owning guide dogs.

The main aid for mobility is the white cane but it comes with so many limitations such as:

- The discrimination tagged to the use of the white cane.
- The White cane cannot detect any obstacles above knee-level such as tree branches.
- A poke in the stomach because of a cane getting stuck in cracks could be painful.
- The cane gets damaged very often needing replacement.
- It only warns of obstacles in the immediate area of the person thus at times not enough time to respond in evading the danger.



THE HOPE TECH JOURNEY

HOW IT STARTED

The founder and CEO, Brian was introduced to technology through a program by the Ministry of Education in Kenya which sought to make high schools more integrated. The integration brought about the sharing of resources and facilities with disabled students. Brian witnessed the challenges students with visual impairment faced. This experience was a turnaround for him, and he vowed to find solutions towards solving challenges experienced by VIPs. Upon joining University, Brian took up electrical and electronics engineering, during his study he would come up with Do-It-Yourself projects and give to his VIP friends to review and use.

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Brian, then realized that some of the products he developed were useful to persons with disabilities. He developed an interest to visit communities of persons with disabilities to clearly understand their problems. This research took him to the Kenya Institute for the Blind, who were kind enough to provide a space where he could directly interact with visually impaired students. Through this research, he identified mobility as a challenge for persons with visual impairment. He decided to embark on a project to develop a prototype (Fourth Eye) that would address the challenge.

PHASE 1 FOURTH EYE DEVICE

Brian started thinking of how he can commercialize the Fourth Eye, a device that employs echolocation technology to image obstructions and warn the user via haptic feedback. The Fourth Eye device has been attached to a white cane to make it smart.

Key features of the Fourth eye device include.

- VIPs can detect obstacles three meters away. A white cane slip-on slip-off feature which allows a person to use the device with or without the white cane.
- A three level of obstacle detection; 0.6 meters, 1.5 meters and 3 meters.
- Ability to detect above-knee level obstacles otherwise missed by the white cane.
- Long battery life of up to 3 weeks.
- Robust material which absorbs shock from most impacts it may be subjected to.

Considering that he was from an engineering background with limited business knowledge, Brian decided to join business incubators and accelerators to learn more about setting up and running a business. The Hope Tech team received a lot of support from the Royal Academy of Engineering during the development phase and a lot of people were willing to volunteer their time and expertise to help on this business journey. Towards the end

of 2018, the company launched their flagship product the Fourth Eye device.

The first year of business was spent trying to understand the business, this assumed a lot more resources than the founders had initially anticipated. The company also received support from the National Council for Persons with Disability, who were the first customers of the product. The development and manufacturing costs were raised from internal sources and grants from Royal Academy of Engineering. The company experienced challenges getting to market which included delays in government standardization certification and could also not access tax exemption. Hope Tech manufactured around five hundred devices at a cost of USD 45 per unit. The selling cost of the device was USD 100 which was expensive for most VIPs.

The founder's key challenge was taking the Fourth Eye Device to the market. Adoption was a challenge as VIPs were used to a certain way of doing things. Most innovators competing for the same market had huge budgets to introduce products and at times would give up to 1,000 pieces free of charge for PWD to test before purchase. Hope Tech's marketing process entailed educating VIPs to change their mindset, adopt technology for mobility and buy the device. They attempted both B2B and B2C sales models targeting organizations/institutions that work with VIPs and individual customers, but it still proved challenging since the process was expensive to the company. As much as the product was relevant for the users, most did not have the ability to pay despite the introduction of different payment models.

The team managed to push 50% of the devices before the COVID-19 Pandemic hit in 2020. COVID-19 pandemic resulted in some of their partners cutting down on funding hence could not continue supporting them. Their sales especially the B2B segment (schools) also suffered. This did not deter them as they managed to sell all the products amidst challenges.

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As a result, one of the key learnings for them was the need to invest their efforts and resources to develop a superior product, launch it first in markets that can afford the product before introducing it to markets that do not have the purchasing power.

The company was forced to go back to the drawing board, did further research on how to innovate their current solution and looked for an international market which could provide a soft landing for their innovation.

PHASE 2 SIXTH SENSE

From Kenya to the world disrupting the way persons without sight move and navigate their world

Hope Tech having understood the mobility challenges faced by VIPs reviewed various kinds of sensors and technology available to further improve the product. The company collected information and gave this to the user for feedback which enabled them to build a product that could detect obstacles and experimented with different configurations of the wearable device.

In late 2020, the company developed Sixth Sense. The product is a mobility assistance device aimed at guiding the VIP users safely through their environment by detecting physical hazards and relaying that information to the user. This gives the freedom of independent movement. Initially, the aim was to have a handheld gadget that detects obstructions and could be carried about like a torch. It was during this period that Brian and his team at Hope Tech Plus joined Innovate Now which is Africa's first Assistive Technology Accelerator. During the programme, the team received hands-on training and mentorship on user, product, market and business development. Hope Tech team also got an opportunity to test their second innovation (Sixth Sense) with the community of persons with visual impairment

and received valuable user feedback through Live Labs. Live Labs is a space provided for clinical partners to help our start-ups understand, validate and test AT products and services for persons with disabilities. Towards the end of the programme, the team acquired skills on how to pitch and presented their business to various stakeholders during the Innovate Now Demo Day.

Feedback from the visually impaired during Live Labs indicated that a more discrete gadget was better. As a result, components were redesigned to make a wearable device, which has seen tremendous success.

The Sixth Sense device uses echolocation and sonar, same as is used by bats and dolphins in object detection and applying modern concepts in IoT, artificial intelligence, machine learning and Big Data, the devices are built to be the ultimate walking companion to the visually impaired.

Impact of the Fourth Eye Device

For most visually impaired people in Kenya, life doesn't hold much as they face significant barriers as they try to participate in the society socially or economically. The Fourth Eye device gave users a new perspective to what life could be by allowing them to attend school, go to religious and social gatherings and even seek employment. Brian says one key win for the product was challenging the user to get out more as they could now do so with minimal reliance on a caregiver.

Impact of The Sixth Sense

The Sixth Sense promises freedom of independent and unaided movement - when the challenge of mobility is solved for visually impaired people it opens up a world of possibilities including:

- A person can travel wherever they want or need to go without reliance on availability of a caregiver.

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- Reduced cost of making journeys as costs associated with a caregiver or guide dog are cut out.
- The Sixth Sense is built to support leisure activities such as visiting parks, museums and places of entertainment thus supporting visually impaired people to live wholesome lives.
- Reduced barriers - The Sixth Sense helps to interact better with the physical environment by providing information about what is happening around.

Key Successes to date

- The best in innovative and inclusive in the deployment of technology - Diversity and Inclusion awards 2019 in Kenya.
- Innovate Now Accelerator- First runners up award.
- Leaders in innovation fellowship awards.
- Royal Academy of Engineering - Africa Prize Innovation award.
- Successful market entry into the UK and Austria.



BUSINESS MODEL AND STRATEGIES

Business Incorporation and Team

Hope Tech plus is incorporated as a profit-making, private limited company in Kenya. At the start, the company had four employees and two co-founders. Brian's role over the years has been to carry and implement the vision of the company while serving as the CEO. He is also in charge of product development, fundraising and business oversight.

Considering the product is a medical device and the company is scaling to new international markets, the scope of work has been focused on building a proper legal structure, acquiring patents and trademarks in the UK and Australia so they can have the freedom to operate in different markets.

Additionally, the company has an advisory board that advises on legal strategies, fundraising and product development strategy and manufacturing.

User Testing and Product Development

The company from the beginning incorporated six VIPs in their testing board who have walked with them in their product development journey. These VIPs have participated in testing and validating the various iterations of products designed and developed by Hope Tech. The VIPS have given suggestions and approved new or improved features. The company conducted user testing on the Fourth eye device on 150 school going children and professionals who are visually impaired. They all gave the valuable feedback that was used in the product development journey.

As a participant in the 1st Cohort of Innovate Now Accelerator Programme, the company also received user testing support through Live Labs which helped validate the Sixth Sense. Fourth eye was developed in Kenya while Sixth Sense product engineering was outsourced to five consulting companies in the UK with over twenty-five engineers working on the product. So far, Hope Tech has conducted trials for Sixth Sense in East Africa, the United Kingdom, Australia, Austria and India. The company has since published a patent in the UK and several trademarks.

Go to Market Strategy

Hope Tech is currently in the UK and the Austrian market. The company decided on these two markets because the founder has networks there having established these relationships during his five years entrepreneurship journey. One of the considerations was they needed a country in Europe where they only needed one certification to operate.

The other consideration was the built

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environment in these two markets which is also quite supportive and there is a big need for independent mobility. Lastly, the purchasing power of the users in these two markets is high.

The company has established distributor partnerships in Austria and the UK, who have the right market for their products. The company is also keen to replicate the same model of operation in other countries.

Fundraising

The company received its first business development grants from the Royal Academy of Engineering. They also received follow-on equity investment from an angel. Up to May 2021, the company had raised a total of USD 200,000.

Hope Tech has recently closed investment of a seed round and is in the process of raising series A in 2023, a testament that investors are looking at Assistive Technology as a growing sector.

KEY TRAITS CONTRIBUTING TO HOPE TECH SUCCESS



EMPATHY

When innovating for persons with disabilities, it is important to relate with the person you are developing the product for. Brian has had to put himself in the VIPs shoes so that he can understand their underlying needs. This trait has been key for him to get valuable feedback to incorporate into his product development.



PATIENCE

Brian stated that the entrepreneurship journey is not an easy one. He has had to learn to be patient with all stakeholders as he builds his company. He advises entrepreneurs going into Assistive Technology innovation to exercise patience especially when developing products with users.



FLEXIBILITY AND ADAPTABILITY

As an entrepreneur, Brian is very flexible. He currently collaborates with partners from across different markets and has had to adapt to different time zones and be available when he is needed.



ABILITY TO NETWORK

Establishing networks with partners and people who are in the same industry as you are, is of immense value. Hope Tech has been able to establish itself in different countries through their networks.



PUBLIC SPEAKING

Brian feared public speaking but the business needed him to share his innovation during product development, user testing, fundraising and partnership development. He has had to learn how to present and talk about his vision and innovation for partnerships and investments. He is quick to note that public speaking is something that comes from constant practice and correction.



FOLLOW THE PROCESS

The Hope Tech founder, Brian is proud that they did things the right way from the beginning, even if some things did not work well, they followed the right process.

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KEY LESSONS FOR HOPE TECH

- When looking for partners, do not trust too quickly. It is important to do a background check on them to ascertain what they are bringing to the partnership. To avoid future misunderstandings, it is important to clearly outline their roles in the company and give them a probation period after which a signed confirmation can be made.
- As a founder with an early-stage business, it is important to talk more about your innovation, you never know who is listening and could be interested in it.
- When hiring do not expect employees to share the company's vision and mission with the same vigor as the founder of the business.

BRIAN'S CALL TO ACTION TO GOVERNMENTS AND PRIVATE SECTOR

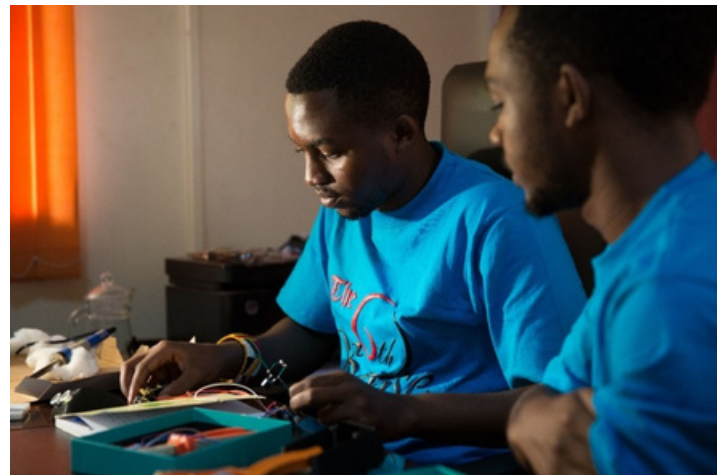
- **Inclusive universal health coverage**
Brian's call to action to governments is to work towards incorporating universal health coverage that covers the provision of

Assistive Technology devices and products.


- **Implementation of laws and policies**
Most governments already have laws, policies and working papers around persons with disabilities and assistive technology. Governments need to enforce the set laws and policies.
- **Inclusion** - Private sector should work towards ensuring inclusion for persons with disabilities starting from offering them job opportunities, ensuring working environments are inclusive, including them in adverts and marketing campaigns and other ways to ensure no one is left behind.

NEXT STEPS FOR HOPE TECH

Hope Tech's vision is to cover a full circle of life for persons with visual impairment starting from education, employment and entrepreneurship. The company's mission is to develop other assistive technologies in the same field and expand in the wider field of other disabilities.



For more information, contact us on:

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