



NUSGRIP

GRADUATE RESEARCH INNOVATION PROGRAMME



GRIP Run 1

Team Factsheets

Flagship Innovation Programme by:



Industry Liaison
Office

Problem and Opportunity

- Growing interest in Video on Demand (VoD) content.
- Content providers use multiple streaming servers and web players to deliver VoD content.
- Content providers suffer from delivering low video quality because of:
 - * One streaming server at time.
 - * Static management of multiple streaming servers.
 - * Bottleneck streaming server.
 - * Deploying custom video codecs with high cost.
- Maintaining a high video stream quality is hard:
 - * **60%** of users suffer from poor video quality.
 - * **5%** ad revenue loss for every **1%** user facing video stalls.
 - * **51%** of customers bail when video quality is bad.
 - * Customer churns by **9%** and **50%** for Netflix and Hulu.

Product and Services (Mission)

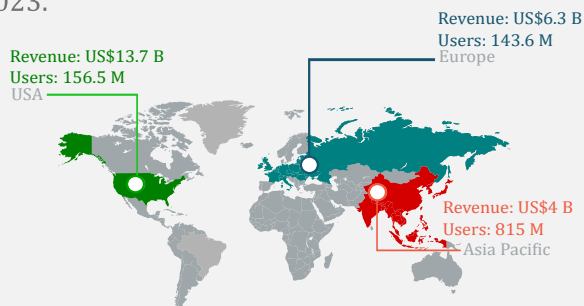
At AtlaStream, we innovate MSDASH solution, the next generation video streaming for prominent user Experience.

- New Queuing theory based video quality selection.
- Handling multiple streaming servers in parallel.
- Use existing video codecs, DRMs and delivery standard (DASH).
- Avoid streaming server bottleneck.
- Works on every device without any cost.
- Highest video quality brings more customers and revenue.
- Patent application filed on 14 September 2018.

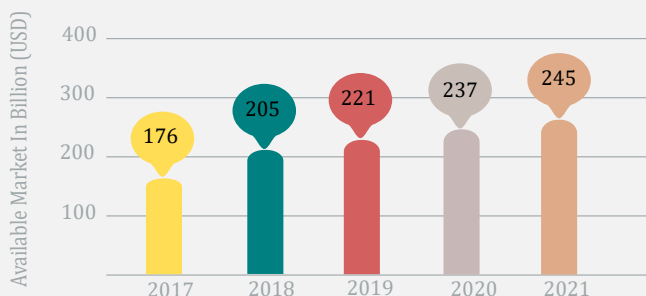


Target Market

- * The global video streaming market is expected to grow from US\$ 139 billion in 2018 to US\$ 591 billion by 2028 at a CAGR of 15.6% in terms of revenue, including live and VoD.
- * Video on Demand (VoD) streaming in Asia Pacific region generated US\$4 billion revenue in 2018.
- * The number of VoD users globally are expected to reach 1.8 billion by 2023.

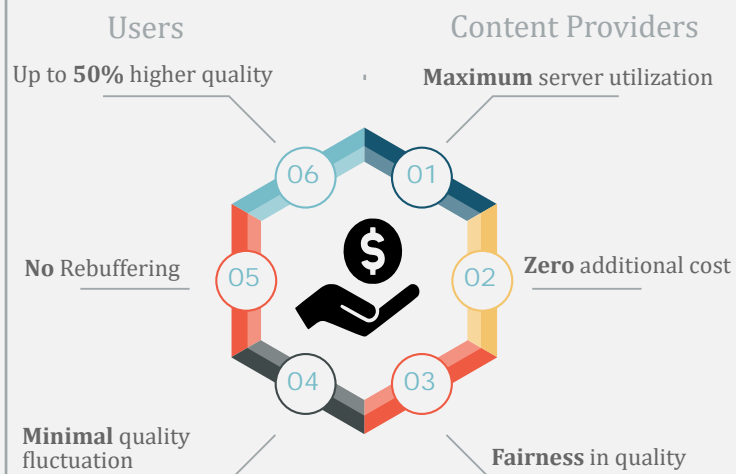


Available VoD Market Size Prediction



Source: <https://www.futuremarketinsights.com/reports/video-streaming-market>

Value Proposition



Business Model (B2B)



Team

Co-Founders



Abdelhak Bentaleb
Research Excellence Award
School of Computing, NUS
bentaleb@comp.nus.edu.sg



Praveen Kumar Yadav
Research Achievement Award
School of Computing, NUS
praveenkyadav@u.nus.edu

Technology Advisors



Dr. Roger Zimmermann
Distinguished Member of ACM
School of Computing, NUS



Dr. Wei Tsang Ooi
Member of IEEE
School of Computing, NUS



Dr. Ali C. Begen
MPEG Standardization Committee

Business Advisors



Teck Moh Phey
Ex CEO Pacific Internet



Amir Nivy
ILO, NUS

- **Inefficient asset utilization
& redundant maintenance**
- **Unexpected breakdowns
& downtime**



Excessive energy & maintenance cost

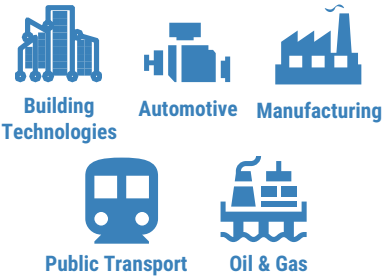


Prognotron™
uses asset data
to solve these
problems!

Prognotron™

**AI-powered asset health
monitoring, optimization
& predictive analytics**


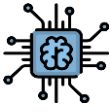

Target Industries



Go-to-Market


- **Direct Sales
(B2B)**
- **Partnership with
OEMs & Service
Providers**
- Platform Subscription**

Our Products

- **Prognotron™ Data Store**
Transforms raw industry data
to useful form through
intelligent data pre-processing
- **Prognotron™ AI Engine**
Cutting edge algorithms
crafted for predictive
maintenance and optimization
- **Prognotron™ DashViz™**
Displays intuitive data
visualizations and actionable
insights

Launch Market




- Chiller Plants Optimization & Predictive Maintenance**
\$720M
annual operating costs for chiller plants
in commercial buildings
532
commercial buildings with water-
cooled chillers in Singapore
\$216M
potential annual savings for existing
chillers through **Prognotron™**

- **Optimize asset
operation & utilization**
- **Anticipate possible
component failures**
- **Derive operational &
maintenance insights**

Our Technology

- Imbalanced Data Handling**
 - Handles scarcity of critical data
- Ensemble of Deep Learning & Machine Learning Models**
 - Robust asset health prediction
- Evolutionary Algorithms**
 - Multi-objective optimization

Key Projects

- **Semiconductor Etching
Chamber Contamination
Identification**
- **High Voltage Insulation
Degradation Detection**
- **Remaining Useful Life
for Turbofan Engine**
20-30%
Improvement over traditional methods

- Apr 2019** Prognotron™ Ruby
- Jul 2019** Prognotron™ Jade
- Jan 2020** Prognotron™ Sapphire

Revenue Projection	Year	2019	2020	2021
	Revenue	0.510 M	3.985 M	10.010 M
	EBITDA	-0.203 M	2.260 M	6.965 M



Empowering
enterprises through
intelligent automation

- **Sivam Pillai**
Product Head
- **Rethnaraj Rambabu**
Business Head
- **Naveen Punnoose**
Finance Head

Transforming Maritime Inspections and Interventions,
using Autonomous Marine Vehicles to keep personnel
safe whilst achieving significant cost savings.

PROBLEM STATEMENT

HIGH COST

~\$500K/campaign

using vessels, ROVs
and divers for just a
single campaign
inspecting 3 jackets.

HIGH RISK

ACCIDENTS

most common during
inspection jobs due to
human complacency
in doing repetitive jobs.

MARKET OPPORTUNITY

**4 Billion spent
on inspections,**
increases as
infrastructure
expands.



**Explosive growth of
74% over 5 years.**

**1 Billion spend for
shallow water work**

PRODUCT

Onboard processing for
intelligence decision making

Battery Systems

High precision navigation



8 Thrusters for 6 DOF

Camera, Imaging Sonar, Lasers

Autonomous Manipulation

Our solution deploys highly maneuverable Autonomous Underwater Vehicles that do not require the constant presence of expensive support boats. Sensor fusion techniques and intelligent path planning enables the vehicle to execute on its pre-programmed missions even in adverse weather conditions. **This means faster and high resolution inspections with at least 40% cost savings, and reduced crew and risk to personnel.**

BUSINESS MODEL



VEHICLE

Oil and Gas
Hybrid Class

Observation
Hybrid Class



SERVICE

Equipment &
personnel hire

Maintenance
contracts



SOFTWARE

Custom Behaviors
and Autonomy core
for other platforms.

WHY US - OUR ADVANTAGES

FULL STACK AUTONOMY

In house expertise in
delivering autonomous
behaviors in both
hardware and software.

DESIGNED FOR BEST COST EFFECTIVENESS IN SHALLOW WATER

Strategically focused
on delivering 300m
rated vehicles with
our powerful
autonomy core.

PASSIONATE AND HARDWORKING TEAM

Iterated on various
vehicle prototypes for
the past 7 years,
concurrently with full
time jobs.

DEVELOPMENT MILESTONES



TEAM



GOH ENG WEI TECHNICAL CO-FOUNDER

Lead Researcher for
Autonomous Self Driving Buses.
9 years of military experience
managing operational units and
billion-dollar CapDev projects.



GRACE CHIA COMMERCIAL CO-FOUNDER

4 years of business development
achieving on million-dollar sales
targets, derived from oil and gas,
defense, ocean science and
academic clients.



BiliOptics

Better solutions for neonatal care

BiliOptics is a Singapore startup specializing in non-invasive solutions for neonatal jaundice management.

Our mission is to provide better solutions to improve standards of neonatal jaundice care for efficiency in hospitals and convenience at home with significant cost-savings.

PROBLEM

80% of newborns experience neonatal jaundice that can cause fatal brain damage in 10%.

Blood tests are benchmark for diagnosis but tedious for monitoring, painful for the babies.

Non-invasive bilirubin measurement is not accurate due to skin pigmentation and fat tissue while monitoring, and is not practical during treatment.

GAPS IN EXISTING SOLUTIONS

- Current phototherapy machines cannot automatically modulate therapy with change in bilirubin levels.
- Lack of non-invasive technology to monitor jaundice accurately during phototherapy.
- Lack of reliable homecare is resulting into longer hospital stay and cost for patients.

COMPETITIVE POSITIONING, BENCHMARK

BiliOptics' competitors are in two different market segments:

1. Neonatal phototherapy devices, and
2. Transcutaneous bilirubinometers.

Neonatal phototherapy devices segment

	Non-invasive bilirubin monitoring	Automatic phototherapy adjustment
PTMaster Pro	Yes	Yes
PTMaster Home	Yes	Yes
BiliCare (Philips)	No	No
BiliSoft (GE)	No	No
neoBlue (Natus)	No	No

PTMaster improves efficiency in therapy as clinical decision making can be made more efficient through smart automation.

Transcutaneous bilirubinometers segment

	Use in phototherapy		
	Before	During	After
BiliScanner	Yes	Yes	Yes
BiliChek (Philips)	Yes	No	Yes
Jaundice Meter (Draegar)	Yes	No	Yes

BiliScanner can facilitate more reliable homecare of the jaundiced newborn.

PRODUCTS

PTMaster™ Pro, is a smart, IoT enabled phototherapy machine with non-invasive monitoring for bilirubin concentration and therapy modulation for use in hospitals.



PTMaster™ Homecare is a cost-effective, baby-and-parent-friendly version of PTMaster™ Pro for use in homes.

BiliScanner™ is the next-generation bilirubin measurement device having a portable ball-pen form-factor.

TECHNOLOGY AND MILESTONES

BiliOptics' technology was developed and patented under National University of Singapore (PCT/SG2018/050230).

- 2016-18 BiliOptics wins prizes in Singapore, China, Hong Kong
- 2018 PCT for PTMaster
- 2019 Incorporation, Production of PTMaster
- Provisional patent for BiliScanner
- 2020 Production of BiliScanner

TEAM

CEO	Dr Li ShiHao Scientist and Co-inventor of BiliOptics' technology, PhD Biomedical Engineering
CTO	Dr Rishav Shrestha Scientist and medical expert MD, MPH, PhD Biomedical Engineering Founder - KuranoMed, Hangzhou Ruixiang Med Tech, Garudaus Aviation
CSO	Assoc. Prof. Dr Dieter Trau Scientist and Co-inventor of BiliOptics' technology Serial Inventor-Entrepreneur, Professor BME Founder-- Ayoxxa, Tip Biosystems

WHY INVEST?

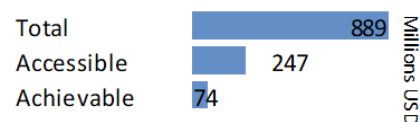
Global Scalable business with competitive advantage against big players

Patented, Deep Technology setting a new benchmark in neonatal care, definitively addresses existing gaps, empowers clinicians and parents

Highly experienced team with clear roadmap for growth and expansion.

MARKET

BiliOptics' target is global neonatal phototherapy market with special focus geographically on Asia-Pacific, and device-wise on phototherapy box (sales/rental) and TcB measurement devices.

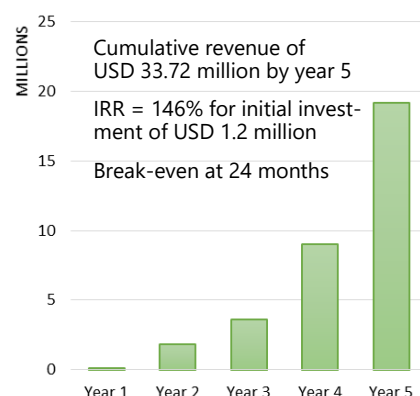


BUSINESS MODEL

For both PTMaster and BiliScanner, we use:

1. Sales (through distributors)
2. Rental (through distributors)
3. Licensing/Partnership
4. Consumables

REVENUE PROJECTION



BiliOptics

83 Science Park Drive, Singapore 118258

info@bilioptics.com

www.bilioptics.com

Our Opportunity

Problem we are solving
“Its difficult to engage with and analyse consumer behavior in large physical spaces”

Michael Krauss, Lagardère Sports and Entertainment

Our Solution

Brain Pool offers a unique digital platform with interactive, hyper-local maps of specialized environments for consumer behavior analytics

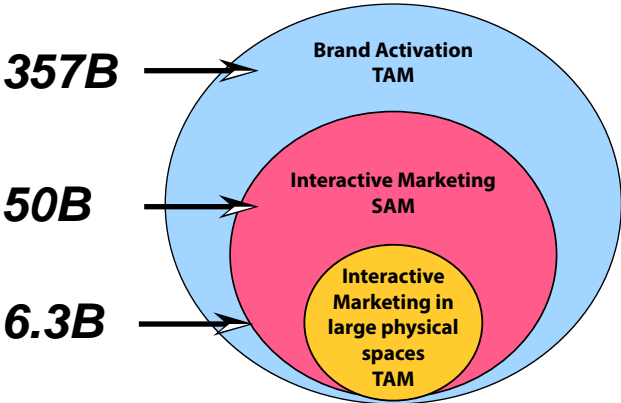
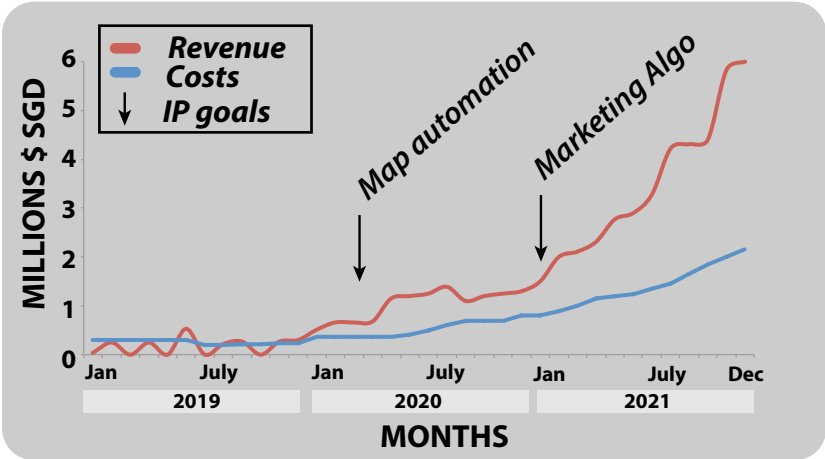
How we solve it



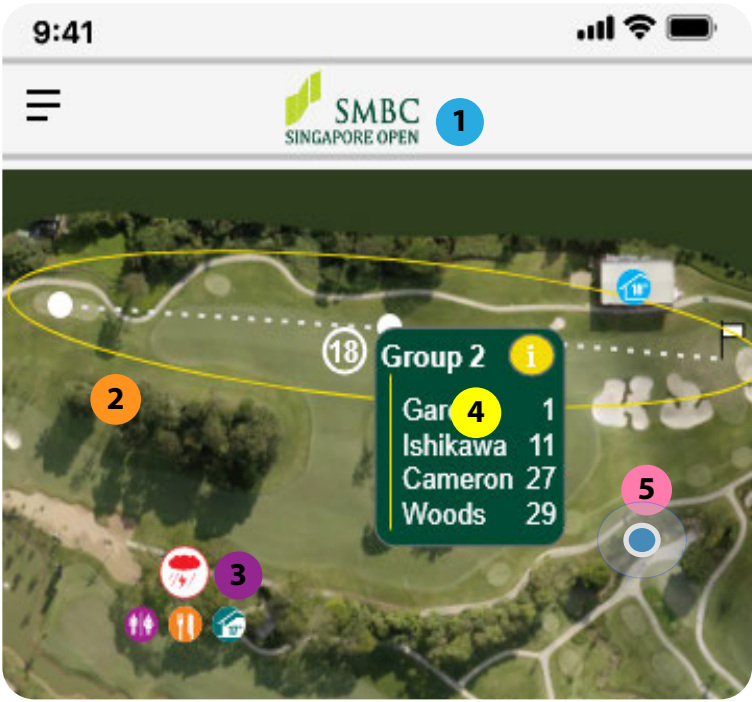
Revenue Streams

- 1. Sponsor Advertising
- 2. Data analytics
- 3. One off mapping fees
- 4. Re-mapping subscriptions
- 5. Software customization

Financial Projections and Market Size



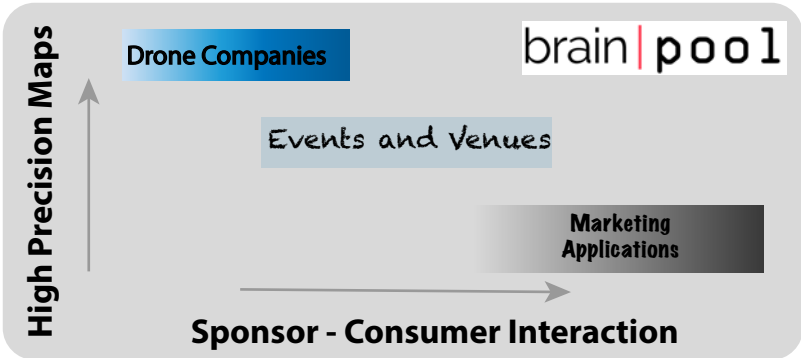
Our Product



Value Propositions

- 1 Increased visibility for sponsors
- 2 High-resolution, geolocated maps of large spaces
- 3 Easy navigation with real time data
- 4 Interactive platform to follow the events
- 5 User data analytics for our clients

Competition



Milestones



Brain Pool Team

- Cullen Owens, PhD**
Co-founder - CEO
Network learning and memory specialist
- Kai Voges, PhD**
Co-founder - COO
Data scientists and software engineer
- Jason Lin**
Financial Advisor
Expert in financial plan and analysis
- Shashwat Garg**
Director of Marketing
Expert in client acquisition / relations

Partners



Your Health. Crafted in One Pill.

Management Team

CEO & Co-Founder
GOH Wei Jiang
PhD, MBA
Registered Pharmacist

COO & Co-Founder
LIM Seng Han
PhD
Registered Pharmacist

Traction

- 1 Collaboration with a national research institute
- 4 Letter of Intents, including local tertiary hospitals
- Awarded SGD \$58 K grant in December 2017
- Patent pending for Craft Health Printers, for scalable 3D printing of pills
- Currently incubated under NUS GRIP

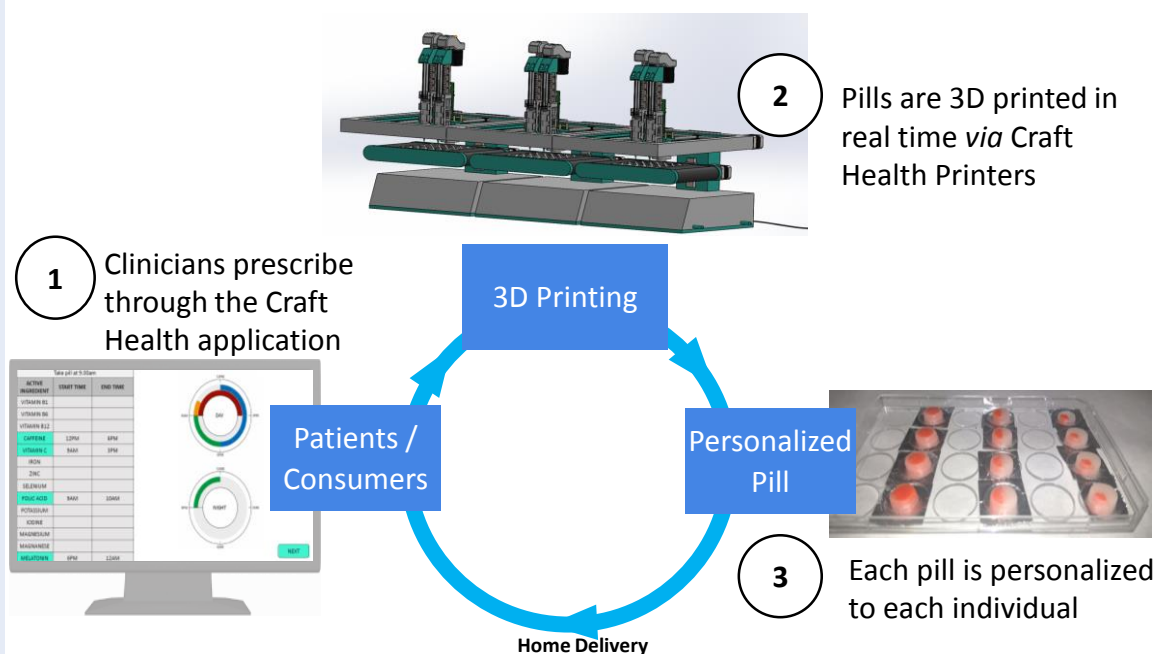
Opportunity

Taking too many medicines can be a problem

- Not taking the prescribed medicines or taking the medicines incorrectly due to too many medicines can result in unnecessary visits to the doctor, emergency department & hospital
- In United States alone, this represents a USD\$ 177 B problem¹

Our Solution

Combining all medications into a daily single pill by 3D printing



Competition

	Daily dose packaging	Single daily pill	Controlled release per ingredient	User Interface	Based in
Craft Health	✓	✓	✓	✓	Singapore
Competitor 1	✓	✓			United States
Competitor 2	✓	✓			United Kingdom
Competitor 3		✓	✓		Europe
Competitor 4	✓			✓	United States
Competitor 5	✓				Singapore
Competitor 6				✓	United States

Market Size

Market Value of Patients on Multiple Medicines

APAC
USD 140 B

ASEAN
USD 10 B

Singapore
USD 0.5 B

¹OptumRx

We **envision** that digitalization of energy will usher in a greener and smarter future.

Our **mission** is to bring digitalized services to buildings through intelligent cyber-physical systems.

3 Research Link
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Patent Pending

BUSINESS

- ✓ SEOS Socket Hardware
- ✓ SEOS Software Services

PROBLEM

Buildings lack plug-load management, even though plug-loads account for 30%-50% of energy in modern buildings. Electrical wall sockets, which serve energy to plug-loads, lack these:

- Remote control • Intelligent safety • Real-time analytics
- Access management • Plug-load asset tracking • Energy Management

OUR SOLUTION

We offer digitalized plug-load management solution using **Smart Electrical Outlet/Sockets (SEOS)**, for residential (R) and commercial (C) buildings. Our novel sockets can uniquely identify and control plug-loads attached with a low-cost identifier. That provides opportunity for new values, such as:

Intelligent Safety (R,C)

- Customized overcurrent protection
- Mitigate overloading/fire hazards

Demand Management (R,C)

- Intelligent plug-load scheduling
- Optimize for customer's energy plan

Asset Management (C)

- Track location of plug-load assets
- Utilization reports for plug-loads

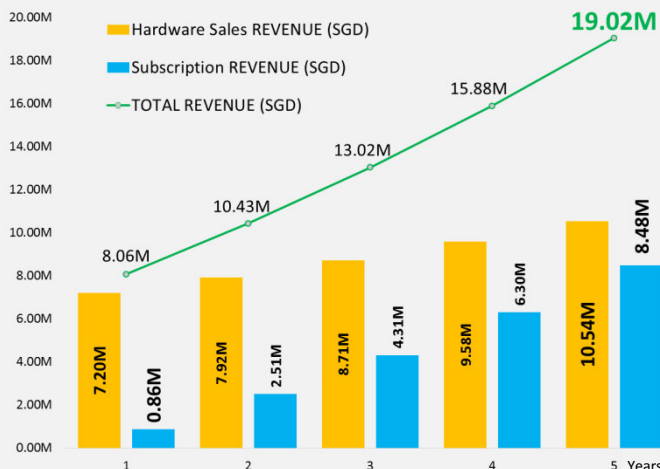
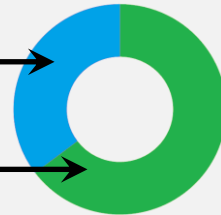
Intelligent Security (C)

- Digitally allow/disallow plug-load use
- Manage socket access for hot-desking

SINGAPORE MARKET & REVENUE PROJECTIONS

Commercial Buildings, (\$96M, 35%)

Residential Buildings, (\$176M, 65%)



TEAM



Dr. Krishnanand K.R.
Co-Founder & Co-inventor
Systems Design & Operations
PhD, Smart Building Technologies



Dr. Hoang Duc Chinh
Co-Founder & Co-inventor
Technical Lead
PhD, Sensor Networks & Optimization



Mr. Keng Sim Lee
Business Mentor & Strategist
Ex-VP Global Procurement, Motorola
Electronics Pte. Ltd



Prof. Sanjib Kumar Panda
Co-inventor & Technology Mentor
PhD, Power Engineering
Associate Professor, NUS

WHY INVEST?

- Smartest socket technology (to the best of our knowledge)
- Sustainable and scalable global scope
- Explicit interest from HDB as part of Smart Nation Initiative
- Opportunity for big-data business offshoots

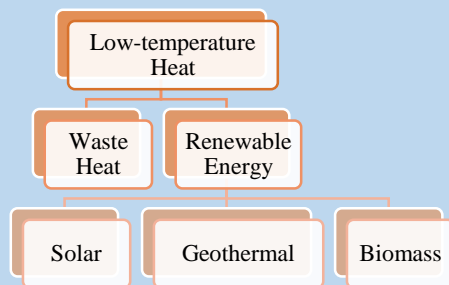


H2C, an NUS GRIP Start-up

PROBLEM

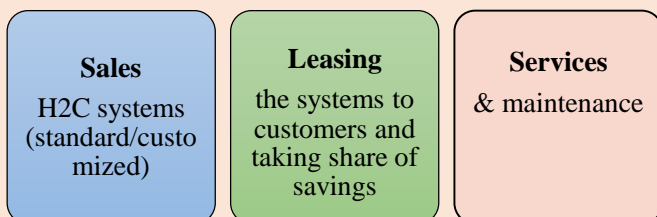
Low-grade heat is abundantly available from many different sources such as waste heat from industrial processes, geothermal and solar energy. The existing technologies for harnessing waste heat are complex, expensive and cannot utilize very low temperature heat (<100°C) in an effective way.

MARKET



Total global waste heat recovery market size is USD 70 billion and the renewable thermal energy market is 77billion which makes the total market of USD 147 billion. Total serviceable obtained market is estimated to be **USD 7.35 billion.**

BUSINESS MODEL

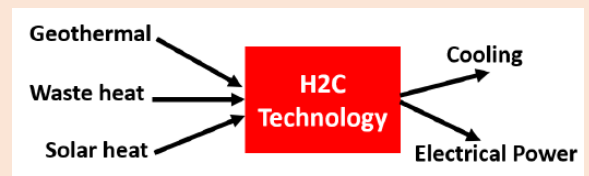


The standard unit (10kW cooling) is sold at 25k SGD giving payback time of about 4 years.

The gross margin in each sale of standard unit is minimum 67 %.

OUR SOLUTION

At H2C we have developed innovative technology which can convert low-grade heat into cooling or power or both. Our patented technology utilizes an ejector in a unique way such that the system can extract more energy from waste heat stream.



BENEFITS

- Customized solution available
- Free cooling and electricity from waste heat
- Very low-temperature heat utilization (>60°C)
- Less pay back time (4 years or less)
- Minimal running costs
- Flexible output (cooling or power or both)

FINANCIAL PROJECTION

- Lowest cash flow: S\$150k
- Positive cash flow in 8th quarter
- S\$ 2.3 mil at the end of 3 years



TEAM



Fahid RIAZ



Ravi RANJAN



Prof. P.S. LEE



Prof. S.K. CHOU

CEO
PhD student

COO
PhD student

Co-founder
Professor

Co-founder
Professor

CONTACT: fahid.riaz@u.nus.edu, +6583240830

Contact Information

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- heseed.singapore@gmail.com
- Innovation 4.0, 3 Research Link, Markerspace, Singapore 117602

2018 - 2019 Timeline

- Q1Q2 2018**
 - Technology Development
- Q3Q4 2018**
 - NUS GRIP Incubated
 - Touch Base with Target Market
- Q1Q2 2019**
 - Patents Filed
 - Pitch to GRIP Investors
 - Seek Seed Funding
- Q3Q4 2019**
 - Secure Initial Customer Base

Our Team

Kenny Ong Yong Keng Chief Executive Officer

- Inventor of Heseed Products
- Masters in Electrical & Computing Engineering in NUS (Research)

Khew Si Ying Chief Operations Officer

- HR & Ops Expert Enabler at Heseed
- Masters in Electrical Engineering in NUS (Research)

Lim Choon Kiat Chief Technology Officer

- R&D Expert at Heseed
- PhD in Science from NUS

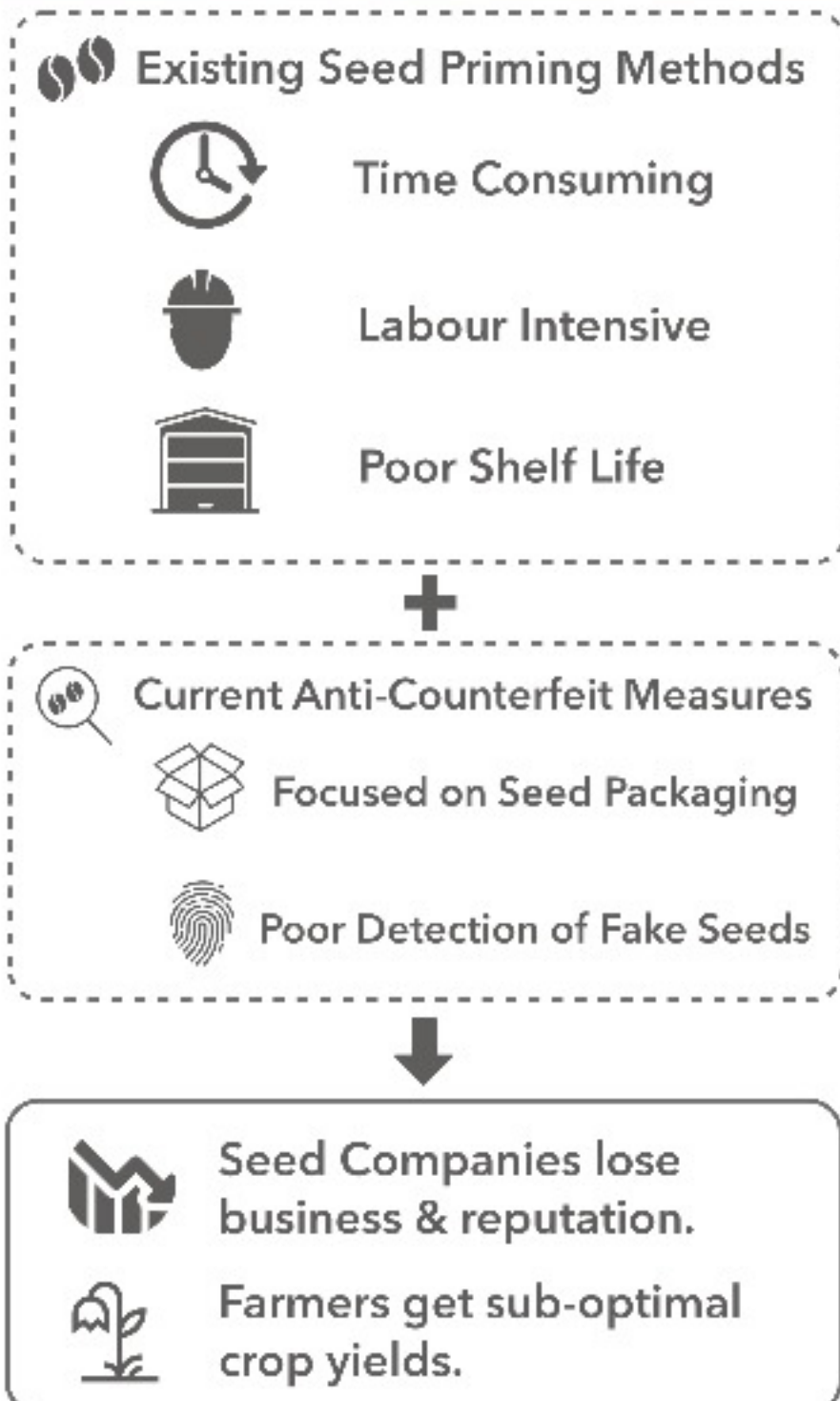
Clara Chong Chief Commercial Officer

- Business Branding & Marketing Expert at Heseed
- Bachelors in Psychology, 2nd Major in Corporate Communications from SMU

Kristav Childress Commercial Advisor

- Expert Coach and Mentor to New Tech Teams
- Former CEO of clean tech startup (water)
- Mentor-in-Residence at NUS Enterprise

Problems



Solutions



Why Invest?

- ✓ **PrimedSeed™ & HonestSeed™** offers significant advantages over existing solutions.
- ✓ Heseed™ is a **highly innovation-driven startup** ready to tackle huge agronomic issues.
- ✓ **Strong expressions of interest** from several **top global seed companies**.

Target Market

- Seed Companies** looking for the best seed priming methods & anti-counterfeit measures to stay competitive.
- Growers** looking for the best seed priming methods to yield higher crop percentages.

Market Size

- Global seed treatment market is valued at **US\$ 4B** in 2017 & expected to rise to **US\$8B** by 2023.
- Globally, value is increasingly lost to counterfeit agri-products from **US\$ 775M** in 2008 to **US\$ 1.4B** in 2014.

Business Model

- License or Sell** PrimedSeed™ & HonestSeed™ to Seed Companies
- Charge Fees** to Growers for PrimedSeed™

Use of Potential Funding

US\$ 800,000 (For 2019 - 2021)	
Investment (\$)	
Research & Development (50%)	400,000
Operations (20%)	160,000
Marketing (10%)	80,000
Manpower (20%)	160,000

Problem & Solution

Efficiency of a research lab is plagued by cumbersome access to multiple resources, corresponding to S\$ 35,500 of lost productivity per annum.

Libbie empowers labs with cutting edge AI tools – connecting researchers with their information and resources. Voice enabled lab operations with Libbie drives valuable insights in resource planning and management enabling smart decisions and smarter labs!



Ask Libbie
to help you with your daily lab queries!



Manage
Lab bookings remotely!



















Analyze
Consumption statistics real time!

Market size

- \$1.5B - global lab information management system annual expenditure
- 3 million global academic research labs
- S\$500M - global academic lab information management system annual expenditure
- 5% of serviceable market: 150,000 labs
- S\$25M potential annual revenue

Competition

Lab voice agent	ELNs	libbie
Inventory Retrieval		
Inventory Update		
Booking Systems		
Speech to Text: Progress Tracker		
Consumption Analytics		
Equipment Usage		
Safety FAQs		
Targeted Advertisements		
Revenue streams	Subscription based pricing	Free/Pay per use
		Freemium

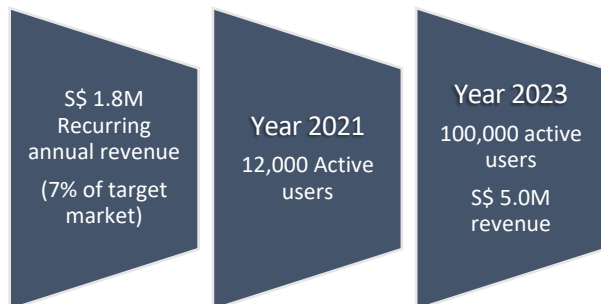
 Available + Convenient  Available + Inconvenient  NA

Conventional virtual lab managers and information resources target discrete functionalities with a 'One size fits all approach'!

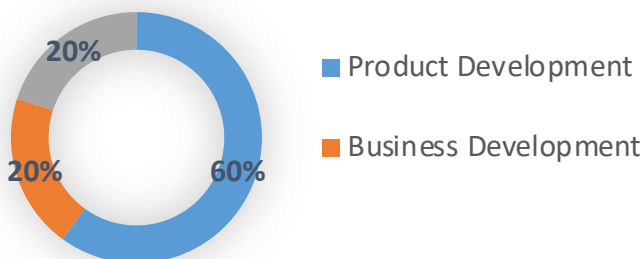
Novel streamlined design, AI assisted voice operations and tailored analytics establishes Libbie as a unique platform for all lab administration needs.

Libbie focuses on servicing the width of lab operations from individuals to departments driving efficiency upwards along the value chain!

Revenue Projections



Investment Seeking : S\$ 350,000



Business model

Lite	Premium	Enterprise
Handsfree access for researchers	Administrative automation and Analytics	Infrastructural integrations
\$0	\$20	Price to be discussed
Per user per month	Per user per lab per month	

Founders



Smarth Lakhanpal, PhD
CEO
smarth@hilibbie.com



Mahalakshmi, PhD
COO
lakshmi@hilibbie.com

Advisor



Shen Nansheng
COO, CONEX
nansheng.shen@conex-systems.com



Established: **2018**
Company Type
Medical Technology

Mission

MIRNA HQ is dedicated to providing quality tools to enhance accurate detection and improve miRNA research workflow for the early diagnosis of cancer.

Who are we?



Ma Qian

Cofounder, Tech
Department of Chemistry, NUS
E0005494@u.nus.edu



Hiranya Dayal

Cofounder, Business
Department of Chemistry, NUS
E0011505@u.nus.edu

Background

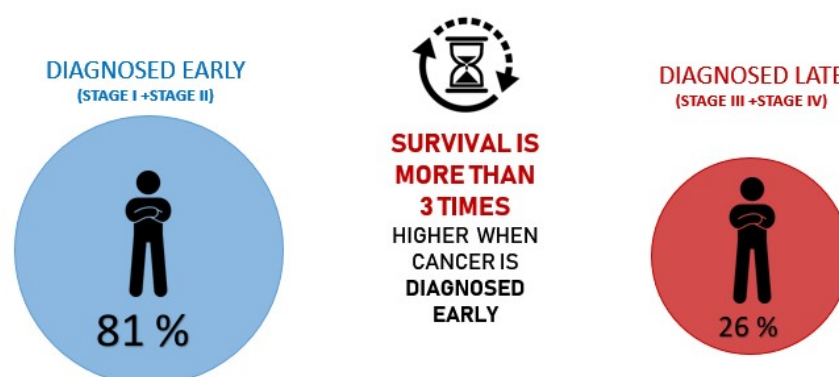
Micro RNAs (miRNA) are a novel class of genetic biomaterial that have shown promise as cancer biomarkers to screen and treat cancer early. Late cancer diagnosis leads to over three times increase in mortality rates. However, the inability to discover asymptomatic cancer at the early stage is a major obstacle in reducing cancer mortality.

The current gold standard of miRNA detection is PCR, originally developed for DNA detection making it a technological misfit for miRNA causing a compromise in its detection accuracy. It is also complicated for the user, inhibiting effective early stage cancer diagnosis.

Problem

The inability to discover asymptomatic cancer at the early stage is a major obstacle in reducing cancer mortality.

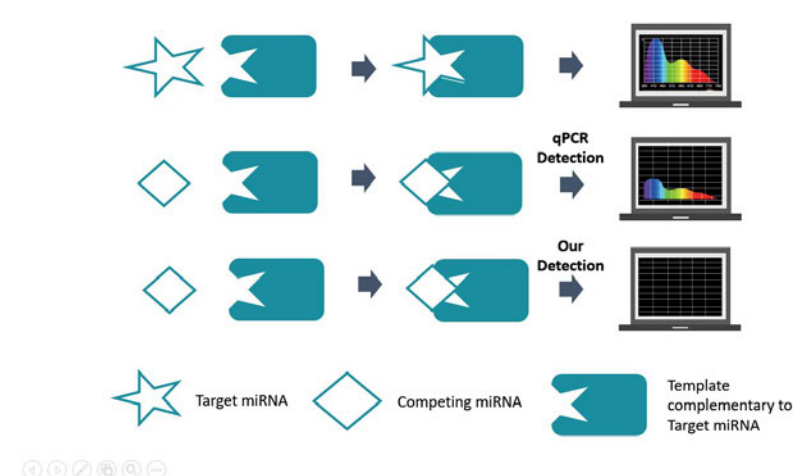
Current methods also necessitate client technology information disclosure which causes confidentiality issues.



Our Technology

We have developed an isothermal method to detect miRNA with a significantly improved accuracy. Unlike PCR's complicated workflow, our method shrinks the entire workflow to achieve the entire detection in a one-tube reaction.

By identifying high risk individuals early, we empower clinicians and cancer researchers to conduct a targeted diagnosis of early stage cancer and provide personalized treatment which can reduce cancer mortality rates.



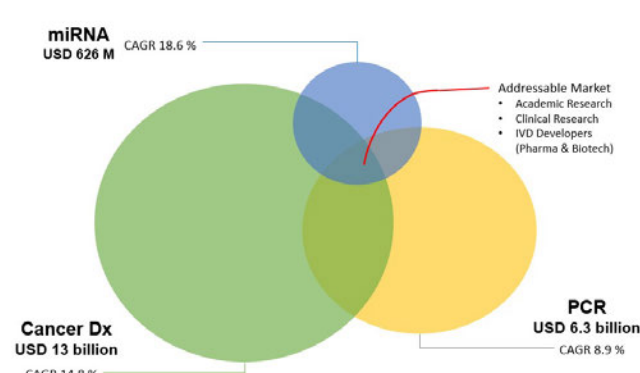
Our Advantage

1. Proven method for the critical accuracy in miRNA detection
2. Proprietary 1-Tube reaction kit to streamline detection
3. Effective alliances with pharmaceutical companies as confidential sequence information need not be disclosed

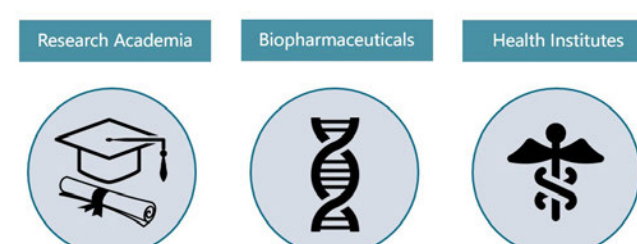
Products

- HQ miRNA 1-Tube Kit™
- HQ Handy Fluorometer™

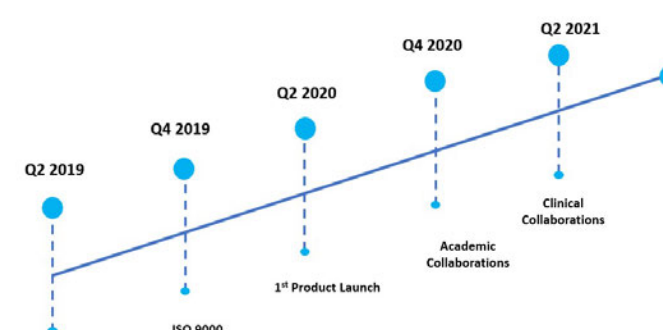
Market Size



Target Segment



Milestones





Milestones

2016

EMA Energy storage grant
\$ 1.8 Million

2017

• Extensive Fundamental research

• Prototype 1 Testing

2018

• Prototype 2 Testing

• Reactor design Patent

2019

• Incorporation of NewGen GAS

• Scale-up Pilot Testing

2020

First Customer (Gen Co.)

2022

Second Market expansion
(Producers)

OUR VISION: To be a global leader in natural gas storage technologies.

OUR MISSION: To deliver safe and economic natural gas storage solution to our customers.

THE PROBLEM

Long term natural gas storage is a serious problem because of

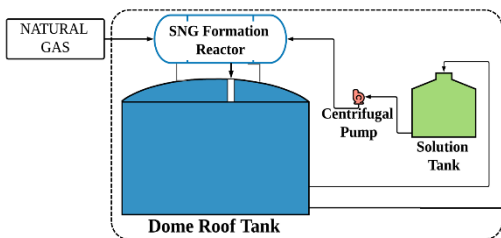
- Geographical constraints of reservoir/salt cavern storage.
- High Capital Cost of LNG tanks.
- Safety concerns with long term storage.

THE SOLUTION

SOLIDIFIED NATURAL GAS (SNG)

Store Natural gas in the form of hydrates, ice-like compounds with natural gas trapped inside

SNG Turn-key Process



THE BENEFITS



SAFE NG
Storage as Gas Hydrates



SUPERIOR PROCESS
(Patent pending)



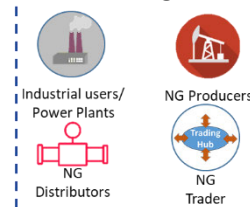
LOWER COST
Store at 0 °C and 1 bar

Technical Specifications (SNG vs LNG)

NG Storage	SNG	LNG
Formation conditions	5-20 °C, 30-70 bar	-163 °C, ~ 1 bar
Storage density (Vol/Vol)	100	600
Storage Pressure (bar)	1 bar	1 bar
Storage Temperature (K)	0 °C	-163 °C
Delivery NG Purity (%)	~99.9 %	100 %

THE MARKET

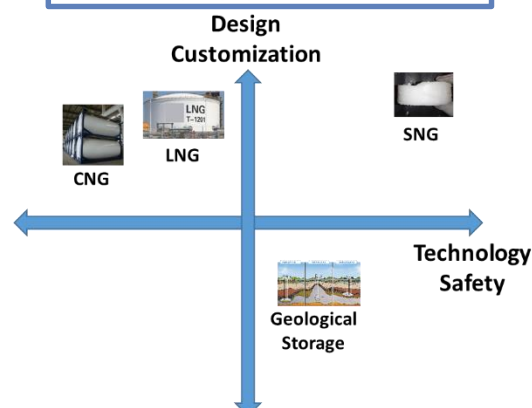
Customer Segments



MARKET SIZE
\$ 9 BILLION /YEAR

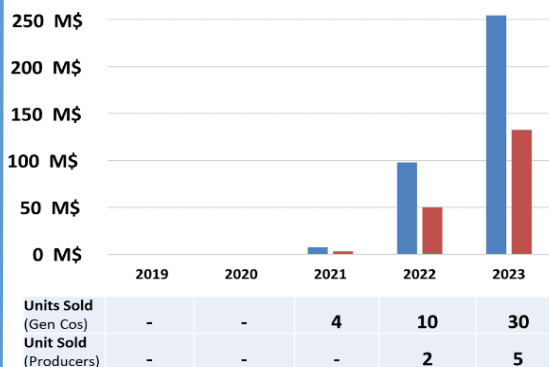
GROWTH
4% up to 2030

TECHNOLOGY LANDSCAPE



FINANCIAL PROJECTIONS

■ Revenue ■ Operating Profit



Units Sold (Gen Cos)	-	-	4	10	30
Unit Sold (Producers)	-	-	-	2	5

FINANCIAL INFORMATION

Company Stage: Seeking Industry partners for pilot testing

Funds till date:

\$S 1.8 Million

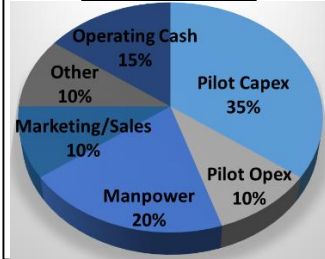
Monthly Burn: \$S 40,000

(During Pilot phase)

Capital Seeking \$S 1

Million

USE OF FUNDS



BUSINESS MODEL



Value Proposition
NG Storage Process



Revenue Streams
System Sales
Service Revenue



Key Partners
Contract Manufac.
Engineering Partners
Energy Regulatory Authorities



Cost
Manufac./Installing cost
R&D Cost & Labor
Inventory Mgmt.

FOUNDER



Dr. Maninder KHURANA
B Eng., PhD in Chem. Eng.
GC in Management of Tech.
> 7 years of R&D experience

CONSULTANTS



Dr. Hari VELUSWAMY
B Eng., PhD in Chem. Eng.
> 7 years of R&D experience



Mr. HOCK Meng Yew
B.Eng (Hons), MSc (Mgt.Tech)
> 20 years Industry Experience



Prof. Praveen LINGA
Dean's Chair
Chem. Eng., NUS
GAS Hydrate EXPERT



Prof. I.A. KARIMI
Chem. Eng., NUS
Process Systems
Integration Expert



Connect
With Us

OUR TEAM

Turning Food Waste to Resource for Plants

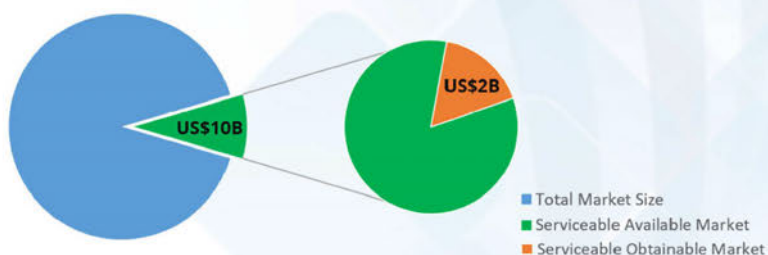
Our Mission

To provide our customers with innovative agri-products that can simplify their agricultural practice for a better & sustainable future.

Problem Statement

Farmers & plant growers need to water plants regularly & can be a pain to ensure plant survival & minimize crop loss under drought conditions.

Market Size



Our 1st Product: InnoGro™

We invented the World's First Environmental-friendly Hydrating Gel (InnoGro™) from Soybean by-product



Our Technology is Patented!
(Patent No.:PCT/SG2018/050431)

Benefits

1. SAVES WATER
2. MINIMIZES watering frequency
3. PROMOTES GROWTH under water-limited conditions

Executive Team



CEO
Tan WK



CTO
Zhu JL

Panel of Advisors

Ong CN (Chief Advisor) Li J (Technical Advisor)
Loh CS (Technical Advisor)

Business Model

We sell to farmers, horticulturists & plantation growers via:

- Direct sales
- Online purchase
- Distributors

Financial Projection



Competitor Benchmark

Company	NUSoil	Company X
1. Product Name	InnoGro™	Product X
2. Basis	Soybean by-product	Crosslinked acrylamide / acrylic acid copolymer partially potassium neutralised
3. Particle Size Distribution [mm]	InnoGro™ XL: 2.0 - 4.0 InnoGro™ Medium: 1.0 - 2.0 InnoGro™ Micro: < 1.0	XL: 2.0 - 4.0 Medium: 0.7 - 2.0 Micro: 0.2 - 1.0 Powder: < 0.2
4. Water absorbency (Tap water) g/g	150 - 200	XL: > 165 Medium: > 180 Micro: > 180 XL: > 160
5. pH value	6.5 - 7.5	7.0 - 8.0
6. Application	Horticulture, Agriculture	Agriculture, Horticulture, Silviculture, Landscaping & Land Reclamation

Milestones



Contacts

www.2ecohub.com
nusoil.sales@gmail.com
For partnerships, please contact:
partner.nusoil@gmail.com



An affordable IoT platform
by using Nano-Satellite
constellation



Contact

Ng Zhen Ning

93204515

zning@nuspace.sg



Founding Members



Co-Founder,
CEO:
Ng Zhen Ning

Had a brief stint in the defense industry before joining his co-founder's lab with the sole intention of commercializing a deep-tech spin off from the university.



Co-Founder:
Dr Luo Sha

Dr. Luo Sha played an integral role in the development of NUS's first nanosatellite, Galassia, as well as NUS's first microsatellite, KR-1. She is currently the principal investigator for Galassia-2, a technology demonstrator and educational nanosat.

Advisors

Prof Low Kay Soon, Director of NUS STAR Center
Jonathan Hung, President Singapore Space Technology Association
Clarence Tan, Founder of Origgin Pte Ltd



Executive Summary



Pitch

NuSpace's vision is to provide an affordable global IoT network and platform, to allow IoT technology to penetrate into hard to reach areas, giving us a better understanding of the world around us.

Problem Statement

85% of the entire world, including the oceans, is still lacking affordable IoT connectivity. Existing connectivity options are expensive; SGD0.60 to transmit an IoT data packet. Such inhibitive cost is preventing IoT to be rapidly deployed in hard to reach areas.

Solution

Deploying a constellation of nanosatellites optimized for IoT connectivity and together with strategic partners providing the ground segment, an infrastructure of affordable IoT network can be deployed to solve the problem.

Market

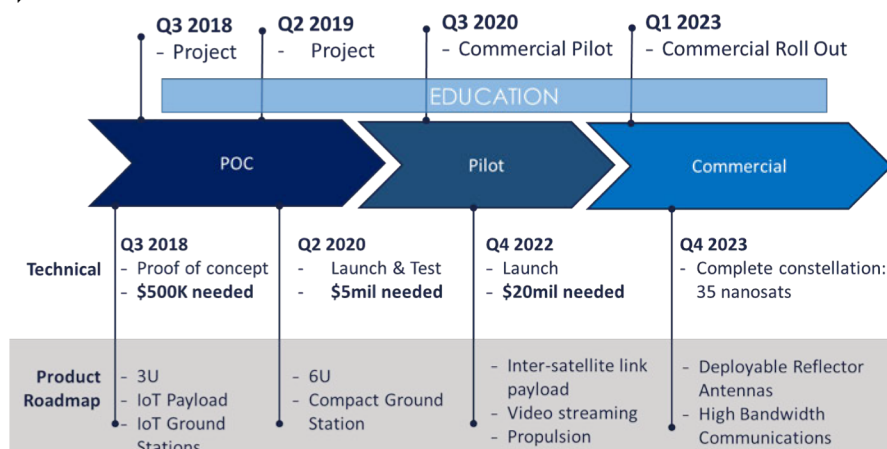
2 target markets; Agriculture and Asset Tracking. IoT in Agriculture industry is expected to grow to 75 million devices and IoT in Asset Tracking industry is expected to grow to 70 million devices by 2022.

Business Model

Direct sales to customers. Online sale of services.



Development Roadmap



MISSION

Intuitive control creation,
platform technology for
diversity

TEAM

Simons Lieu

- Co-founder – CEO
- 30 years of experience in Product&Solution Creation

Minglu Zhu

- Co-founder – COO
- Engineer (MS background)
- Ph.D student at NUS

Qiongfen Shi

- Co-founder – CTO
- 6 years' Hardware Engineer
- Research Fellow at NUS

Chengkuo Lee

- Co-founder
- Professor in ECE, NUS

Contact Information

Simons Lieu

Web: www.sensemor.com.sg

Cel: +65 96335333

Email: cjlieu@sensemor.com

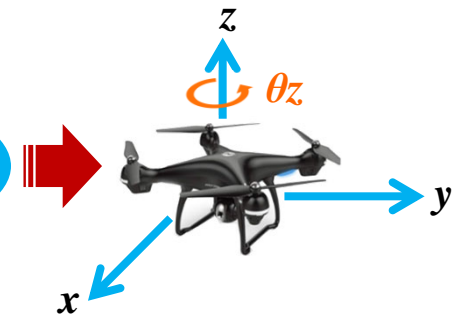
Twitter:

PROBLEM OF CURRENT DRONE CONTROL

- Sophisticated control / intensive training
- Bulky / weighty
- Two hands control
- Short battery lifetime
- Tiring posture to hold
- Not sensitive
- Not ergonomics
- Non left hand friendly

SOLUTION & TECHNOLOGY

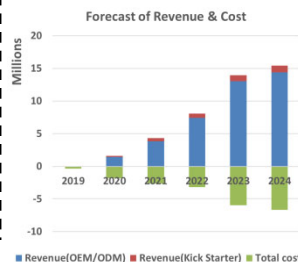
- Single/double hand operation switchable
- Highly Intuitive; sensitive
- Light weight
- Self-powered Sensor
- More pleasure, entertaining, and relaxed in control



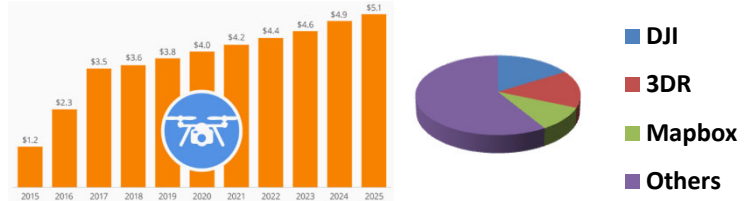
BUSINESS MODEL

- ◆ Kick starter
- ◆ OEM/ODM controller
- ◆ Technologies licensing

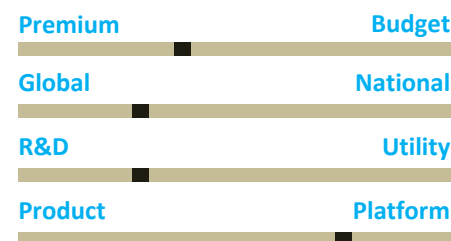
FUNDING EXPENSE



MARKET SIZE



COMPETITIVE POSITIONING



MILESTONES & PATENTS

- ✓ Founded: Jan. 2019
- ✓ Launched Product: Apr. 2019
- ✓ Secured Funding: Apr. 2019
- ✓ Team Expansion: Aug. 2019
- ✓ Four patents filed
- ✓ Seven international journal papers published

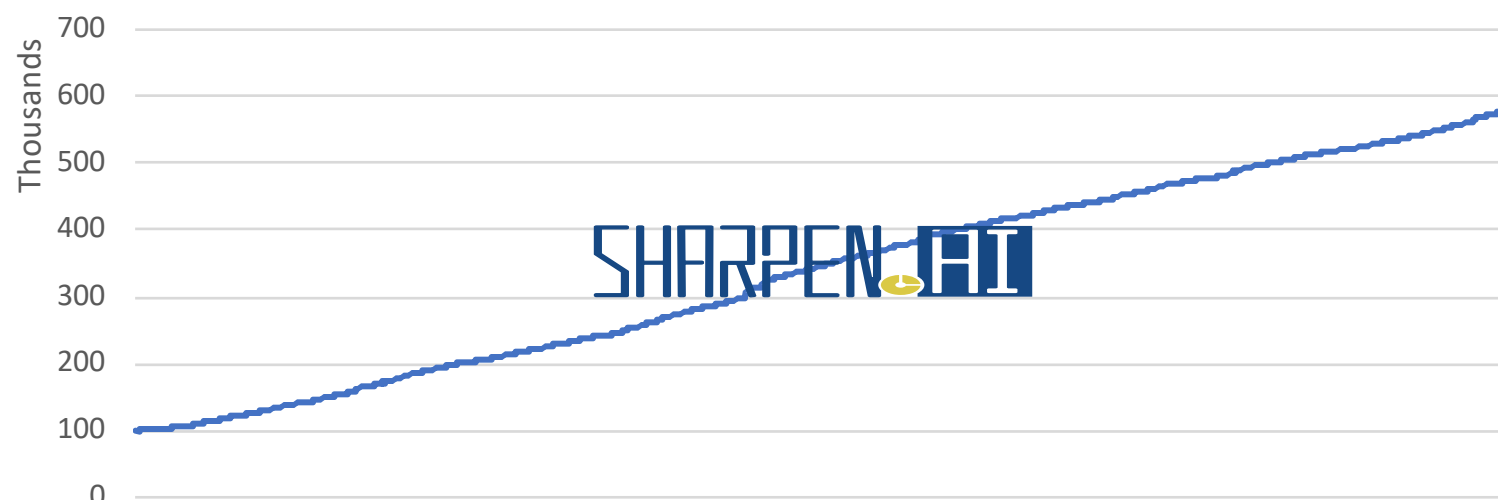
Spec.	Features	Spec.	Features
Package size	50 x 50 x 30 mm ³ + handle	Transmission power	10 mW
Package weight	47 g +	Operating range	100 m
Package material	Plastic	Operating duration	10 min
Model type	Fixed-wing/glider/helicopter	Battery	9 V
RF frequency	2.4 GHz	Charger port	Yes
Bandwidth	100 kHz	Operating temperature	0-40 °C



Our Vision and Mission

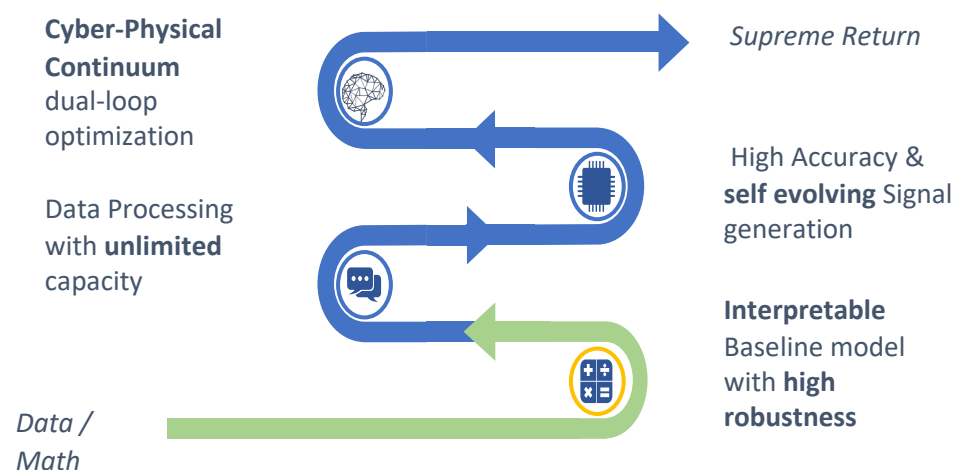
- ❑ We use AI to aid human to achieve supreme returns by mining from data
- ❑ We empower our clients to focus on relationship instead of making hard trading decision

2014-2018 Out of Sample Back-Testing Results (Daily)

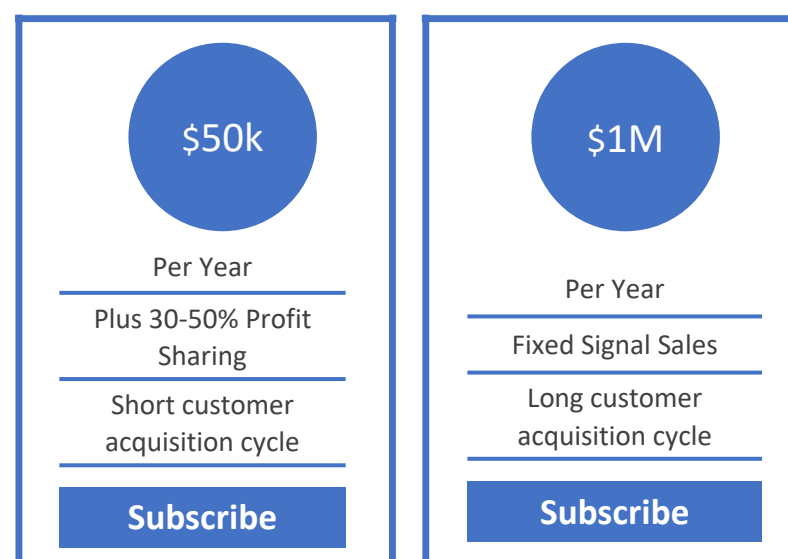


Performance Indicator	Hedge Fund	AI-Driven Fund
Sharpe Ratio	1.38	1.66
Maximum Drawdown	(4.28)	(8.11)

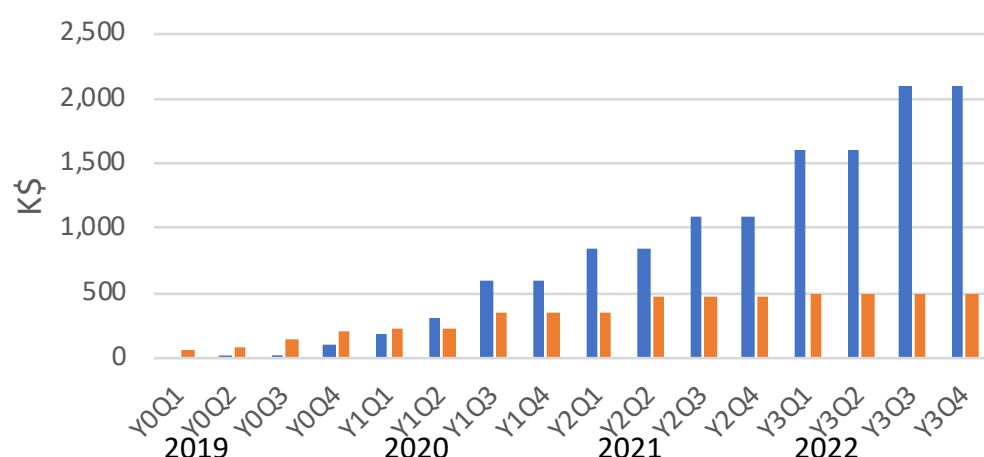
Our Technology



Our Business Model



Financial Projection



Our Co-Founders



Gary Zhang, CIO,
Ph.D. Student NUS



Jiang Jun, Chief Data
Scientist, Ph.D. Student

T E R E D O

A n a l y t i c s

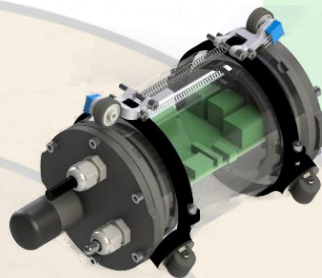
Clarity through data

Vision: Illuminating pipeline prognosis through smart data collection and data analytics.

Mission: To provide timely & comprehensive insights on pipeline integrity before the occurrence of detrimental leaks and clogs.

Current Challenges: Current methods for pipeline inspection are laborious, time consuming, costly, and yet inaccurate. Untimely detection and false alarms on degrading pipelines adversely impact operations and maintenance, and even lead to catastrophic accidents due to late detection of pipeline leakage.

Innovative Solution: An easy-to-deploy, accurate and cost-efficient in-line pipe inspection process with a smart device capable of collecting a plethora of pipeline data for meaningful and timely prognosis of pipeline networks (Patent pending).



Competitive Positioning

- Complements existing pipeline inspection solutions.
- In-line inspection for both large and small diameter pipeline network.
- Autonomous navigation inside pipeline.
- On-the-fly deployment.

Market Potential: With a total market size of US\$7 Billion¹, Teredo Analytics initial target market on ASEAN's US\$50 Million of "non-piggable" pipelines.

Founding Team



Wong Liang Jie
(Business)
Machine learning
image and data
Analytics
tmswong@nus.edu.sg
97970873



Rajat Mishra
(Technical)
Embedded system,
adaptive planning
and autonomy
rajat.mishra@u.nus.edu
85352653



Prof. Mandar Chitre
(Technical Advisor)
Associate Professor,
Department of
Electrical & Computer
Engineering, NUS



Derrick Lee
(Business Advisor)
O&G industry
business
development and
project management

Business Model

- Inspection services
 - Data collection
 - Analysis report
- Subscription based analysis software

Key Milestones

Early 2019

- Version 1.0 for potential pilot testing in water pipeline networks.

Late 2019

- Tailored version 1.0 for water pipeline network.
- Continued engagement with potential Oil & Gas (O&G) pipeline operators in Singapore.

Late 2020

- 1st contract for inspection of water pipeline network.
- Tailored version 2.0 testing in potential O&G bypass pipeline in Singapore.

Late 2021

- Recurring yearly contract for water pipeline network.
- 1st contract for inspection of O&G pipeline networks in Singapore.

Additional Funding Required for Development of Device Version 2.0

- SG\$500,000



- SG\$140,000 Device Development
- SG\$120,000 Employee Expenditure
- SG\$200,000 Device Certification
- SG\$40,000 Miscellaneous

¹ <https://www.marketsandmarkets.com/PressReleases/pipeline-safety.asp>

Product Summary

DewEasy™ for non-invasive, faster, comfortable, hassle free specimen collection of cough biopsy from pneumonia patients

Current pneumonia specimen collection is highly inefficient and painful. Diagnostic outcome are tedious and inaccurate.

Our Solution: DewEasy™

- Non-invasive technique
- Minimal discomfort to patient
- High quality specimen

Pilot Clinical Validation

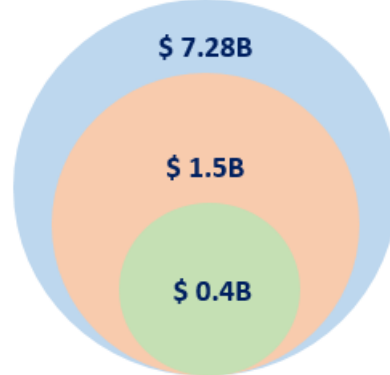
Cough specimen collected using **DewEasy™** is ~ 2000x more sensitive

Pneumonia statistics

Total number of patients:

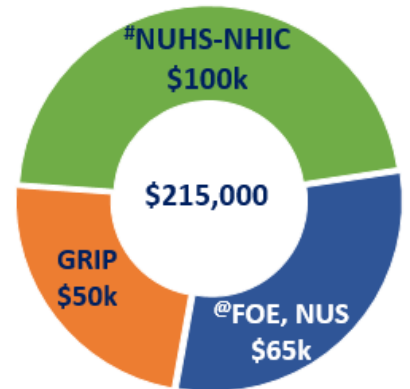
- 450 million/year* (Globally)
- ~10,000/year^ (Singapore)

Market size (CAGR~12%)

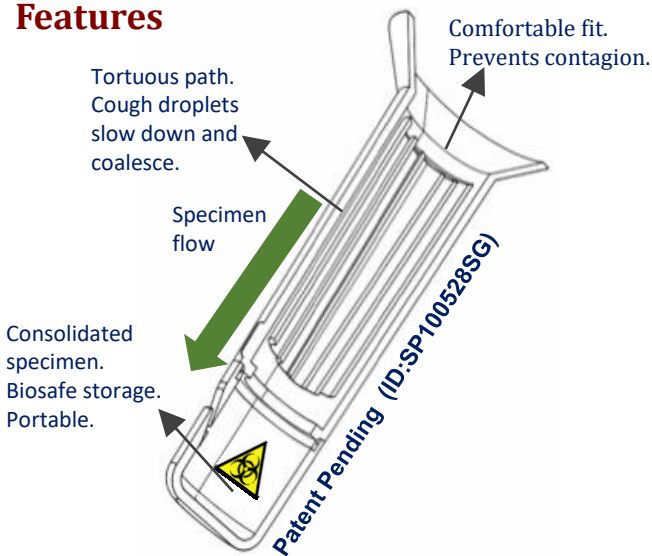


Funding

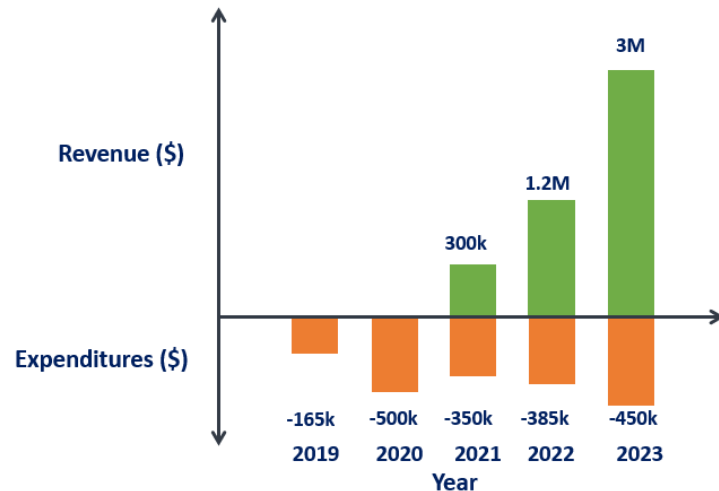
- Total fund generated \$215,000
- Non-equity funding granted (\$165,000)



Features



Estimated financial projection



Co-Founders Team



Dr Suresh PhD
Chem. & Biomol.
Engineering, NUS



A/Prof Ching Chiuan Yen
School of Des. &
Environment, NUS



Dr Win Sen Kuan MBBS
MRCSEd(A&E) MCI FAMS
Emergency Medicine, NUH



A/Prof David Leong PhD
Chem. & Biomol.
Engineering, NUS



tusensecough@gmail.com



+65 9730 3770

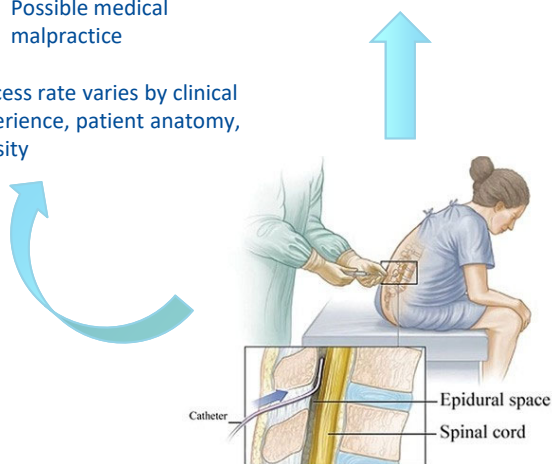
HiCura™ Medical

Hello to Smarter Care

HiCura Medical Pte Ltd is a Singapore-based med-tech company building intelligent solutions for image-guided medical procedures. Our **MISSION** is to assist medical professionals in making better decisions by integrating AI into image-guided surgeries. Our **VISION** is to reinvent the gold standards in healthcare.

PROBLEM STATEMENT

- Low accuracy (40%) of epidural administration ('blind' surface landmark and palpation guidance)
 - Increase in number of injections and surgery time
 - Possible medical malpractice
- Multiple injections cause distress to patients
- Complications includes back pain, post-epidural headache, hematoma, spinal injury
- Success rate varies by clinical experience, patient anatomy, obesity



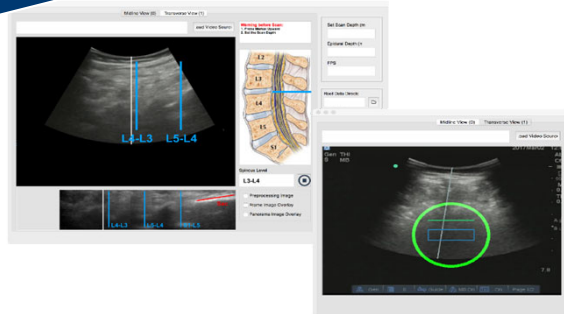
OUR PRODUCTS

uSINE™

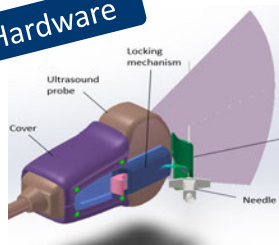
(compliance to IEC 62304, ISO 13485, ISO 14971, IEC 62366, ISO 11737)

Software

Intelligent spinal level identification & epidural space localization



Hardware

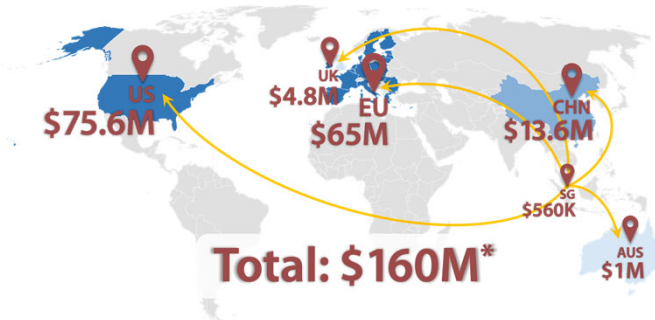


Needle clamping guidance system for hassle-free insertion

HIGHLIGHTS

1 SG hospital on board (KKH)	150 patients for clinical trials	\$360,000 funding received to date
92% success rate for patients with BMI <30	90% success rate for obese patients with BMI >30	

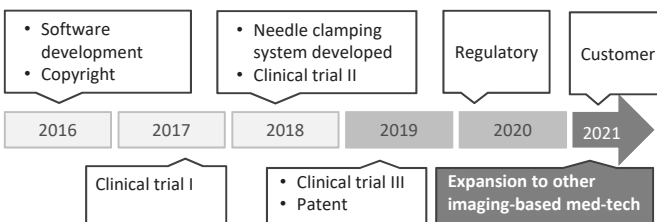
MARKET SIZE



KEY BENEFITS

	Intelligent Landmark Identification	Real-Time Guidance with 2 Hands	Catered to Obese Patients	Reduced Reliance on Doctors' Expertise
uSINE™	✓	✓	✓	✓

TIMELINE



CONTACT US

Email us: elemj@nus.edu.sg

Call us: (+65) 94650358

Visit us: #01-02, Innovation 4.0, 3 Research Link, Singapore 117602

Contact Information

Address: i4.0 Building, 3 Research Link, Singapore
Telephone: +65 91330611
Website: <https://www.voxdei.io/>
Email: jen@voxdei.io

Funding

Capital required SGD 250,000
40% research and development
25% marketing and sales
15% operations
10% legal and administrative

Pitch

Our software can save clients millions in man hours by providing fast, transparent, customisable and reliable statistical analysis of text data. In three years' time, every market research agency and polling company will have a subscription to our service.

Problem

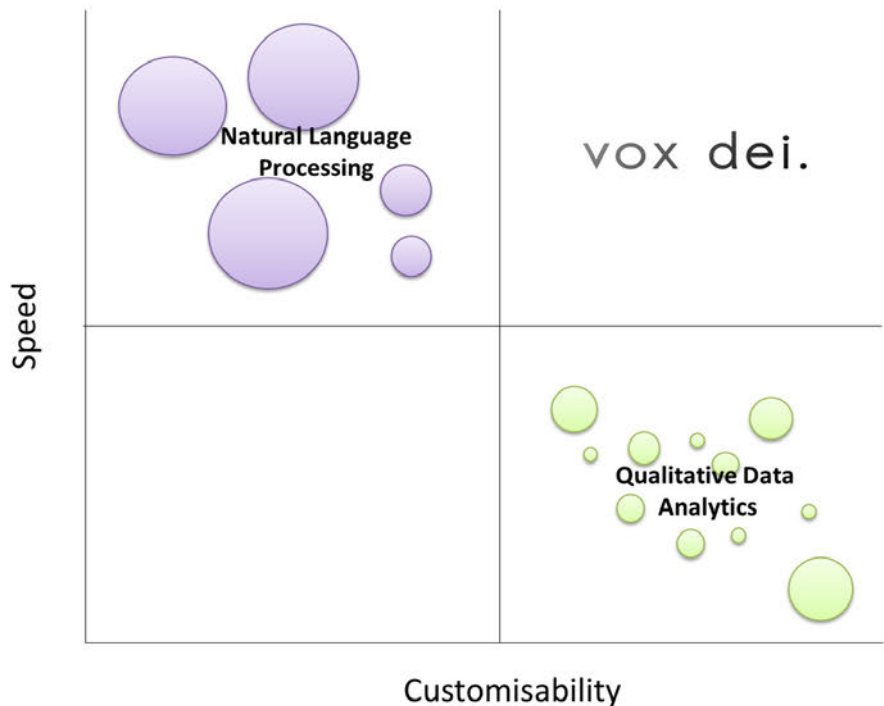
"We had 200 user interviews to process. It took us four months to analyse all of them, and even then we kept finding mistakes in our categorisation." - Professor Li Hongyan, early adopter.

Solution

Automatic text processing software using a simple, proprietary corpus-comparison algorithm: the latent categories methodology (LCM).

Feature	Capacity	Advantages
Speed	• Analyse text data in hours rather than weeks	• Reduce manpower costs • Improve turnaround time
Accuracy	• Reduce/eliminate user error	• Extract actionable statistical insights from text data • Combine the detail of focus group research with the generalisability of MCQ surveys
Objectivity	• Reduce/eliminate user bias	• Develop strategy based on facts, not assumptions
Novelty	• Spot trends that others don't	• Discover opportunities your competitors have missed

Competitors



Team

CEO/Co-Founder

Jennifer Dodgson
PhD, Lee Kuan Yew School of Public Policy

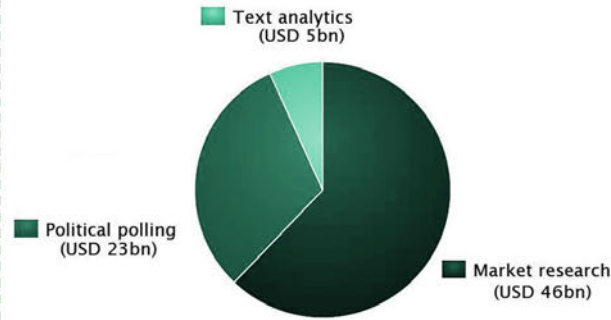
CTO/Co-Founder

Pei Junjie
MA Economics, Fudan University/University of Oslo

Advisors

Paul Singh Gill (Co-founder, Iota Omega Ventures)
Jules Yim (Consultant, Cognitive Edge)
Charles Chao Rong Phua (CEO, Solaris Consortium)

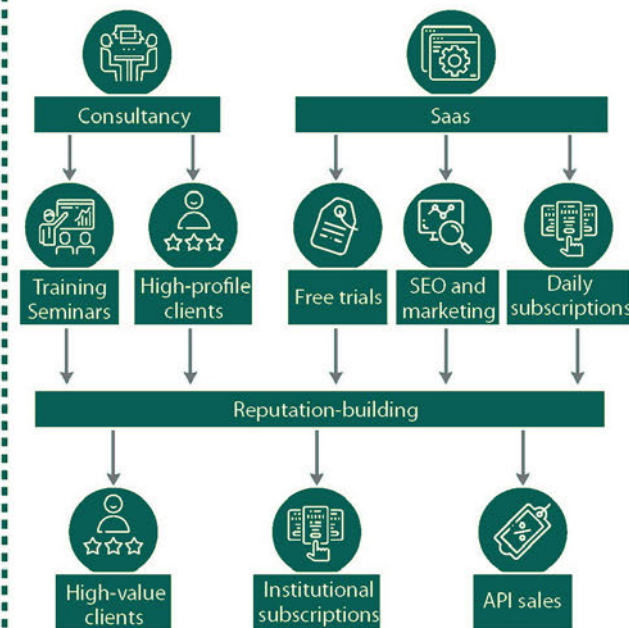
Total Market Size



Go-to-Market Strategy

Business model:
SAAS - Daily/monthly subscriptions

Data collection/analysis consultancy



Milestones

