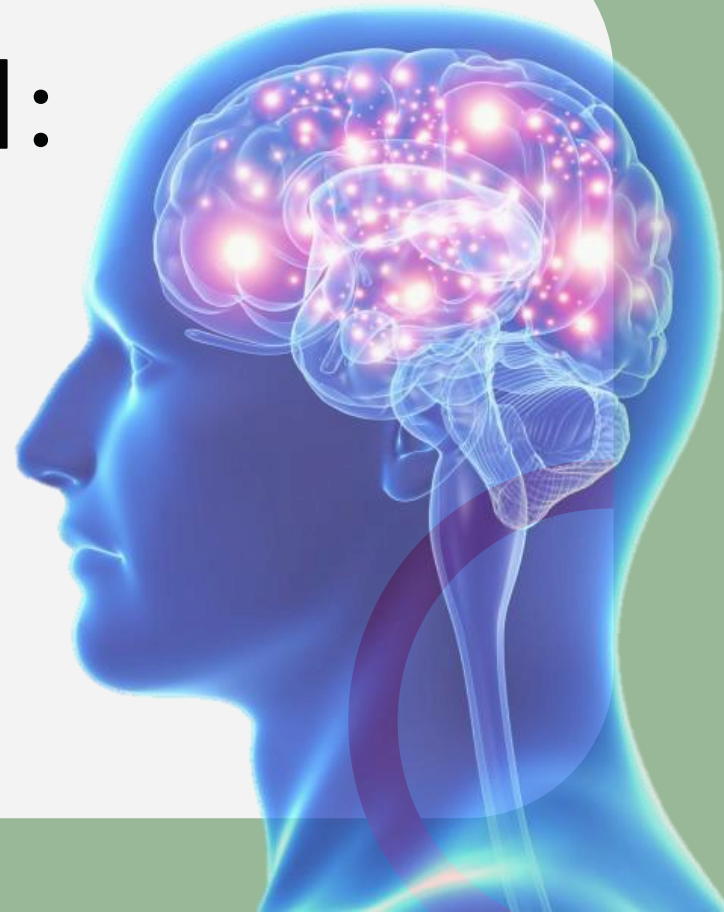


PRODUCT PITCH:

InfraStrjoke by **WEPFER**

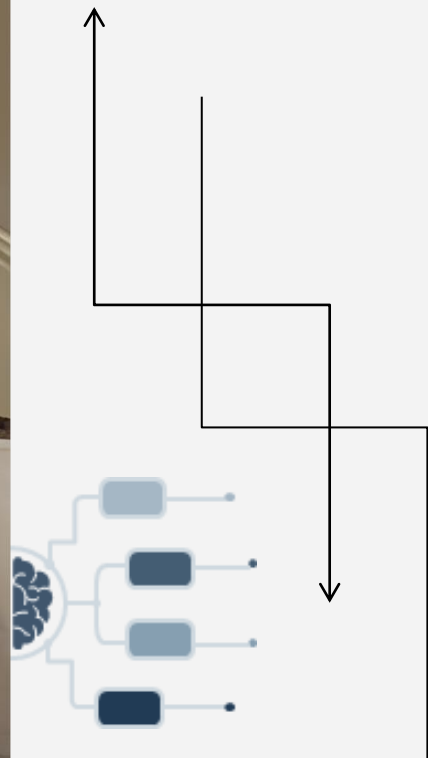
Yeung Lok Yeung
Chan Cheuk Ka
Ho Yu On

1155176892
1155174356
1155175831



VIDEO







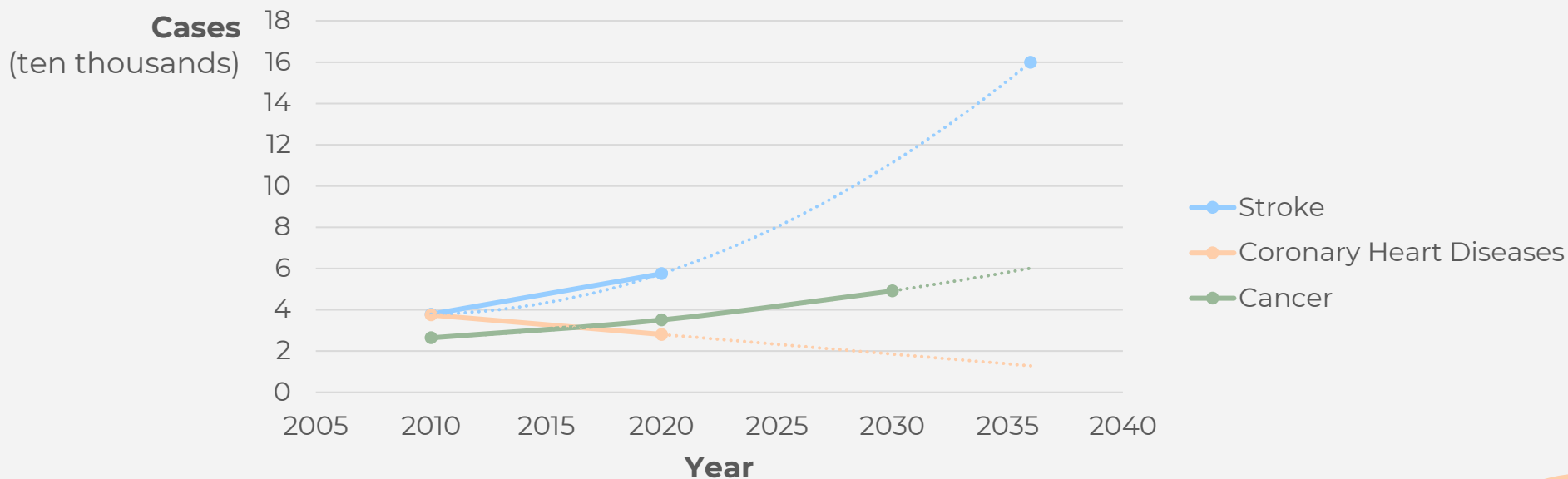
Every 6 seconds

one patient dies from stroke^[1]



BACKGROUND INFORMATION


Chronic disease prevalence in Hong Kong





~2,000,000

neurons permanently damaged **per minute** ^[1]



[1] <https://www.ahajournals.org/doi/10.1161/01.str.0000196957.55928.ab>

GOLDEN HOUR OF STROKE



STROKE! Golden Hour



10 minutes

Some brain regions (red) already are irreversibly lost.



1 hour

More time elapses, more brain tissue dies. Urgent treatment could still limit the disability.



3 hours

The window is closing. Treatment at this time may result in moderate disability.



6 hours

Without treatment, all at-risk tissue has died; the unfortunate result may be severe disability.



CONFUSING SYMPTOMS OF STROKE

01

Sudden numbness
of body parts

03

Sudden dizziness

02

Sudden confusion

04

Sudden trouble in
seeing



WHAT CAN WE DO?

MARKET ANALYSIS

	Stroke detection	Auto emergency services calling	Health monitoring
Personal Emergency Link Service	●	●	●
Apple Watch	●	●	●
Samsung Galaxy Watch	●	●	●
?	●	●	●

WEPFER TEAM



YEUNG LOK YEUNG

Hardware Engineer

BEng in BME (UG)



CHAN CHEUK KA

Software Engineer

BEng in BME (UG)



HO YU ON

Business manager

BEng in BME (UG)



INTRODUCING:

InfraStrjoke HEADBAND

A smart handband designed to detect strokes and alert the emergency services as soon as possible

PRODUCT FEATURES



Stroke detection^{[1][2]}

Near infra-red spectroscopy (NIRS) is used to measure blood vessels

AI interpretation

An **on-board AI chip** interprets the NIRS data to identify strokes



GPS

GPS chip is used to precisely determine the patient's location

Bluetooth



Emergency services are notified via **bluetooth connection** to the patient's phone

[1] <https://pubmed.ncbi.nlm.nih.gov/19618828/>

[2] <https://pubmed.ncbi.nlm.nih.gov/21388077/>

LIVE, with InfraStrjoke



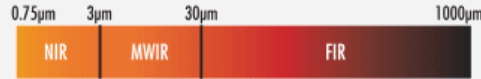
Without
InfraStrjoke

With
InfraStrjoke

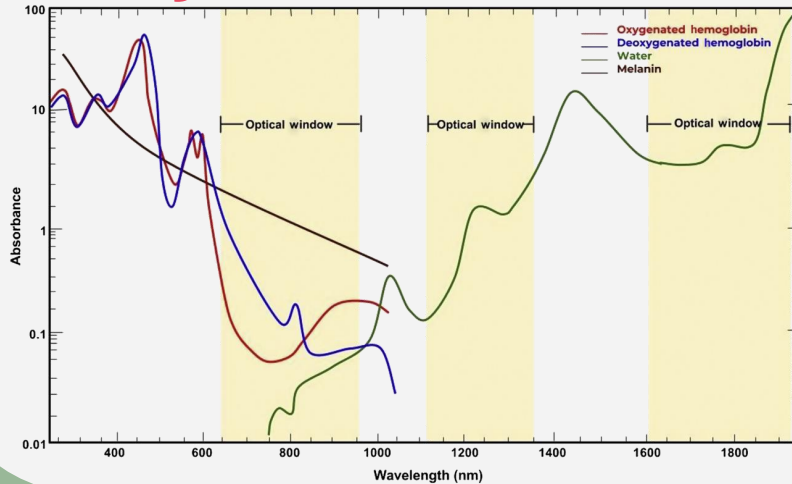


NEAR INFRA-RED SPECTROSCOPY

Harmless



Blood oxygenation & sugar measurement^{[1][2]}



High penetrative power



89% coverage



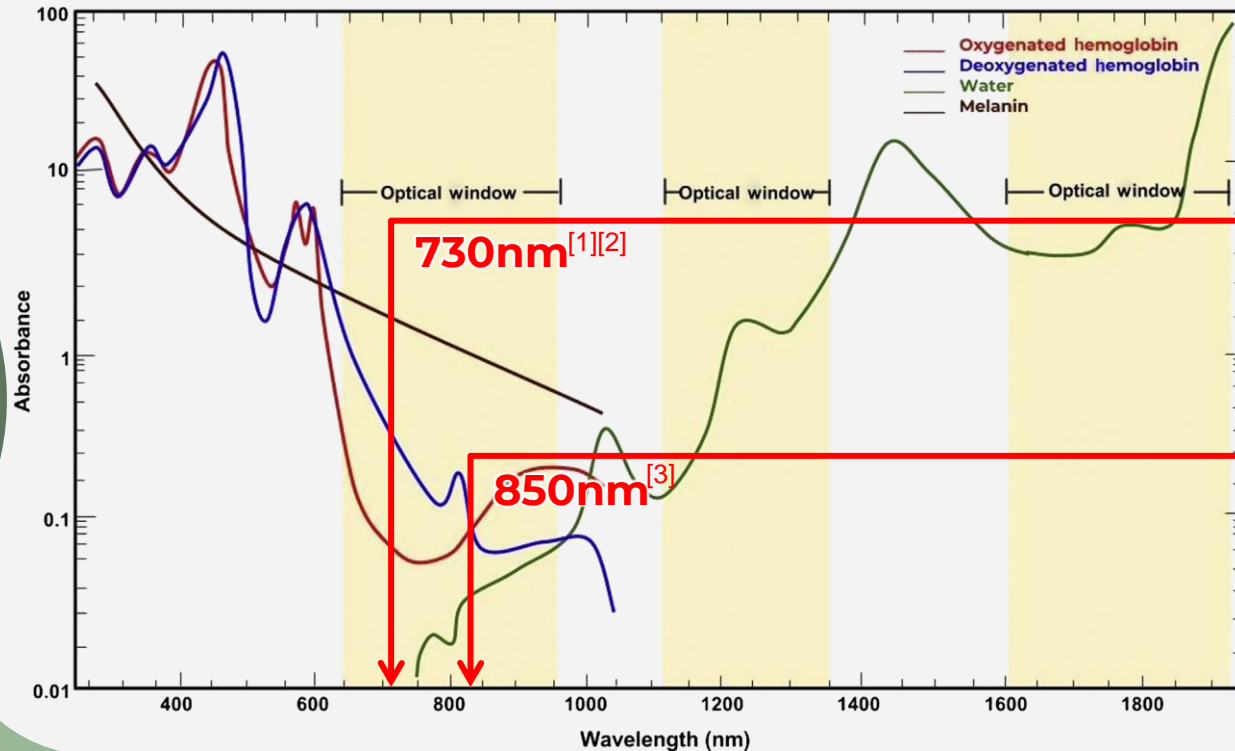
[1] <https://pubmed.ncbi.nlm.nih.gov/19618828/>

[2] <https://pubmed.ncbi.nlm.nih.gov/21388077/>

[3] <https://doi.org/10.1016/B978-0-12-815305-5.00005-1>

[4] <https://www.vielight.com/can-light-penetrate-the-skull/>

NEAR INFRA-RED SPECTROSCOPY



Blood oxygenation

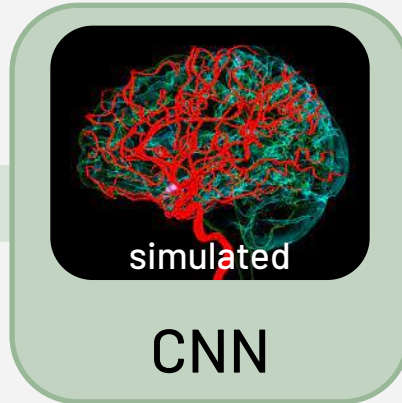
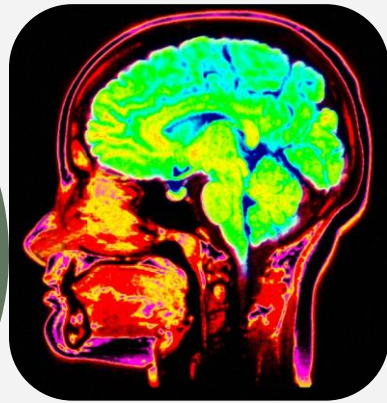
Blood vessel imaging

[1] <https://pubmed.ncbi.nlm.nih.gov/19618828/>

[2] <https://pubmed.ncbi.nlm.nih.gov/21388077/>

[3] <https://doi.org/10.1016/B978-0-12-815305-5.00005-1>

CONVOLUTIONAL NEURAL NETWORK^[1]



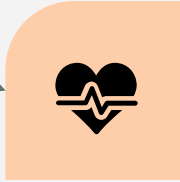
STROKE?
✓ / ✗

[1] <https://www.sciencedirect.com/science/article/abs/pii/S0168900202019083>

COMPLEMENTARY FEATURES

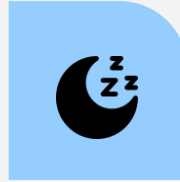
Health monitoring

Continuously measures and records **vitals**



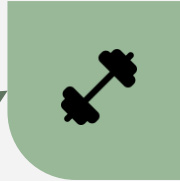
Sleep tracking

Tracks **sleeping quality and time** using the built-in sensors



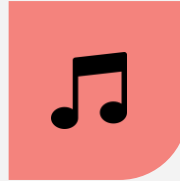
Exercise tracking

Tracks exercise time and intensity, and estimates **cardiovascular health**



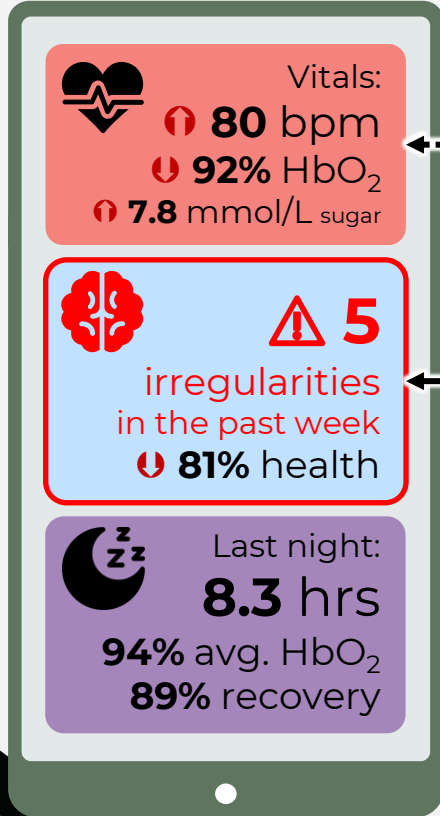
Headphones

Plays music using **bone conduction technology**^[1]



[1] https://en.wikipedia.org/wiki/Bone_conduction

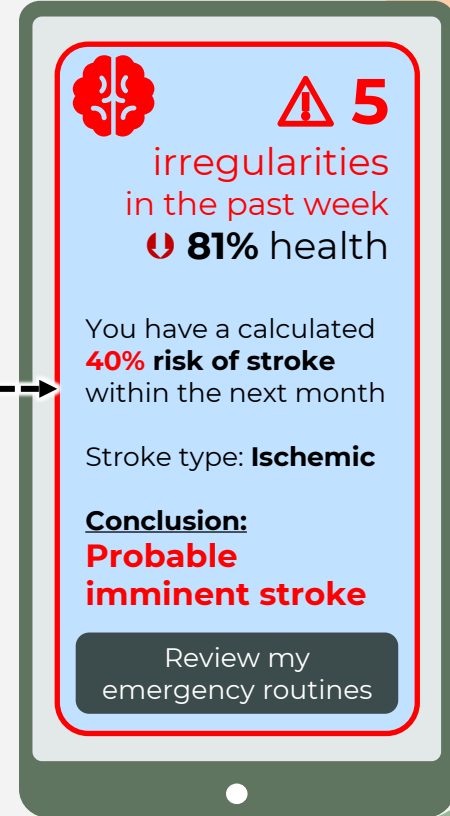
COMPLEMENTARY MOBILE APP



Shows real-time and past measurements of vitals

Notifies the user of any irregularities (e.g. blood vessel constrictions)

Calculates the probability of stroke



PHYSICAL DESIGN

ERGONOMIC

The headband should fit the shape of the head perfectly

FLEXIBLE

It is flexible enough to be comfortably worn even when sleeping

RECHARGEABLE

Easy-to-handle environmentally-friendly rechargeable lithium-ion batteries will be used

CUSTOMISABLE

The exterior can be interchanged easily for preference and ease of cleaning



PRODUCT **BENEFITS**



Consumer Health

Protection against strokes for the vulnerable



Clinical Utility

Pinpoint of stroke location for surgery and treatment



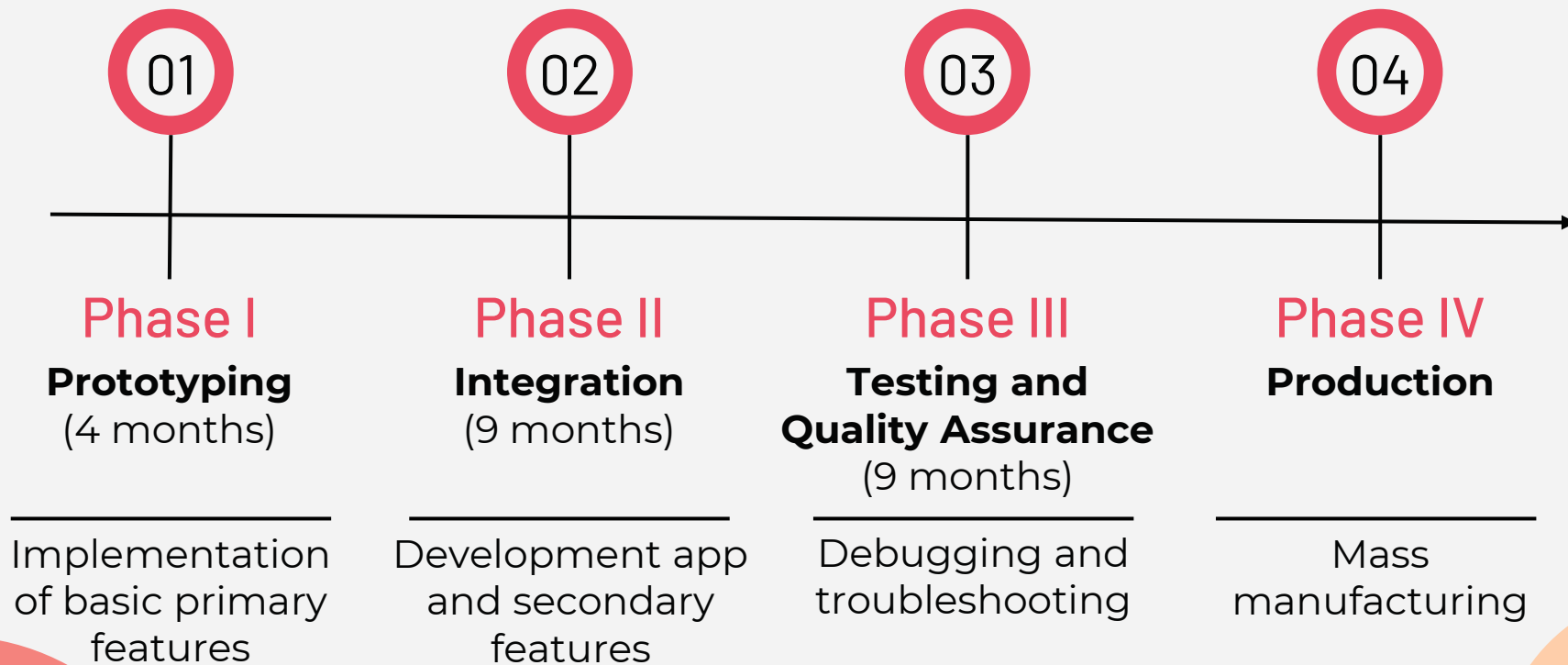
Medical Development

Data collection for cerebral-vascular disease research

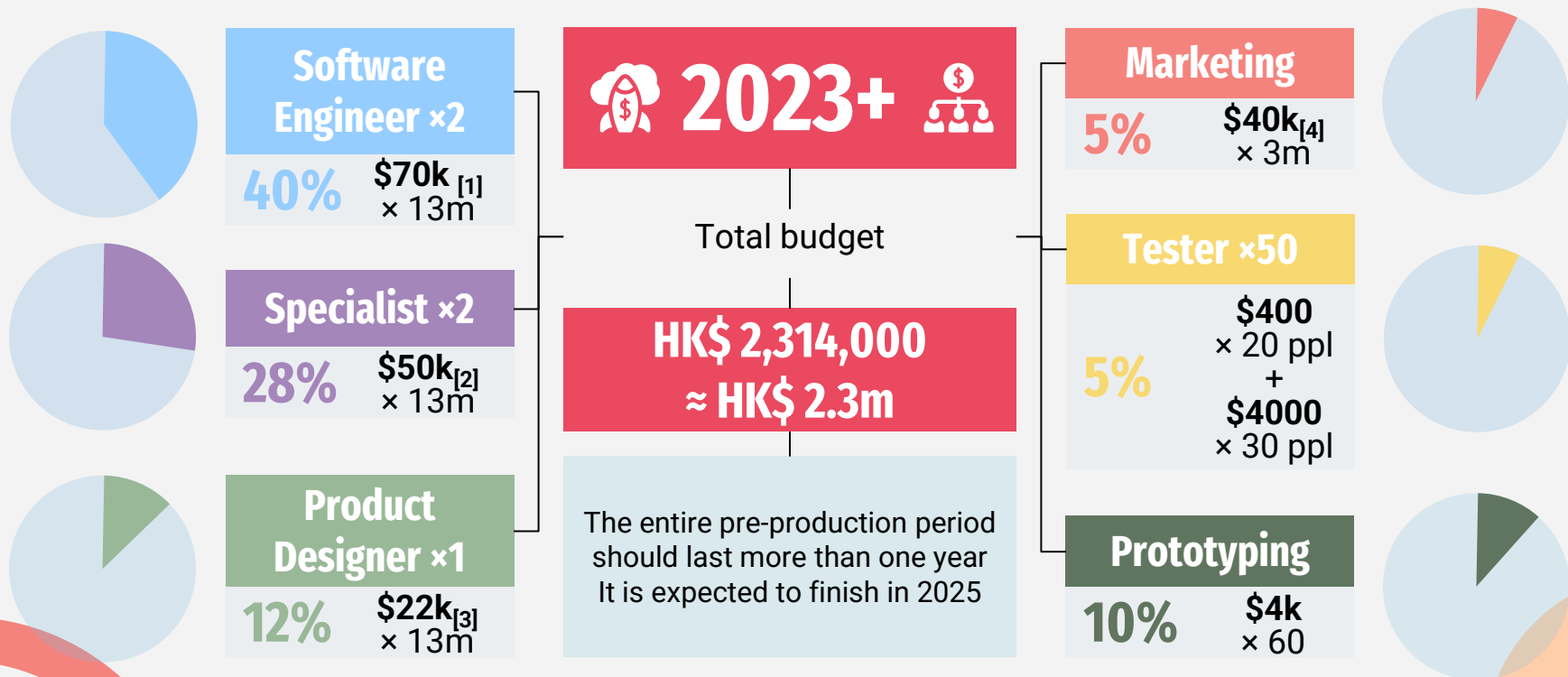
MARKET ANALYSIS

	Stroke detection	Auto emergency services calling	Health monitoring
Personal Emergency Link Service	●	●	●
Apple Watch	●	●	●
Samsung Galaxy Watch	●	●	●
InfraStrjoke	●	●	●

DEVELOPMENT TIMELINE



PRE-PRODUCTION BUDGET PLAN



[1] https://www.glassdoor.com.hk/Salaries/hong-kong-software-engineer-salary-SRCH_IL_0_9_IC2308631_KO10_27.htm

[2] https://www.glassdoor.com.hk/Salaries/hong-kong-specialist-salary-SRCH_IL_0_9_IC2308631_KO10_20.htm

[3] https://www.glassdoor.com.hk/Salaries/product-designer-salary-SRCH_KO0_16.htm

[4] https://www.glassdoor.com.hk/Salaries/marketing-salary-SRCH_KO0_9.htm

PRODUCT MARKETING

01

Hospital Authority

Our best partner for targeting the identified stroke high risk group

03

Electronic Stores

For the public who want to medical review for themselves

02

Elderly Service Centres & Elderly Homes

For the protection of the elderly.
More than 75% of stroke patients are elderly [5]

InfraStrjoke is:

Convenient, Accurate, Life-saving!



STROKE IS NEVER A JOKE

THANK YOU!

REFERENCE LIST

- [1]https://www.glassdoor.com.hk/Salaries/hong-kong-software-engineer-salary-SRCH_IL.0.9_IC2308631_KO10.27.htm
- [2]https://www.glassdoor.com.hk/Salaries/hong-kong-specialist-salary-SRCH_IL.0.9_IC2308631_KO10.20.htm
- [3] https://www.glassdoor.com.hk/Salaries/product-designer-salary-SRCH_KO0.16.htm
- [4] https://www.glassdoor.com.hk/Salaries/marketing-salary-SRCH_KO0.9.htm
- [5] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6535078/>
- [6] http://www.strokefund.org/noflash/aboutus_part1.php
- [7] <https://www.ahajournals.org/doi/10.1161/01.str.0000196957.55928.ab>
- [8] <https://pubmed.ncbi.nlm.nih.gov/19618828/>
- [9] <https://pubmed.ncbi.nlm.nih.gov/21388077/>
- [10] <https://doi.org/10.1016/B978-0-12-815305-5.00005-1>
- [11] <https://www.vielight.com/can-light-penetrate-the-skull/>
- [12] <https://www.sciencedirect.com/science/article/abs/pii/S0168900202019083>

Q&A Session

Do you have any questions?

--- Contact us ---



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