Supporting Isolated Seniors

For BFG 2024

Team: HeartHackers ❤️
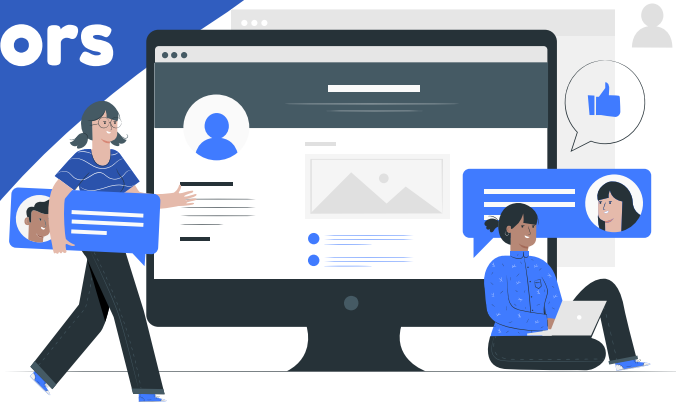**Carlos Chacon**
Developer
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Product Designer

# By 2030, 1 in 4 citizens will be aged 65+

Super-aged society

*Evolving needs and aspirations*

Shrinking labour force

What works well today, might not work well in the future.

- This is our operating environment today.
- By 2030, 1 in 4 citizens will be aged 65+.
- We would have a super-aged society by 2026 where 21+% of our residents are 65+.
- We are also a society with evolving needs and aspirations - seniors with less children or no children at all to look after them; seniors who are increasingly independent.
- Shrinking labour force - less people working in the social and healthcare sectors.
- What works well today, might not work well in the future. There is a need to review and improve processes.
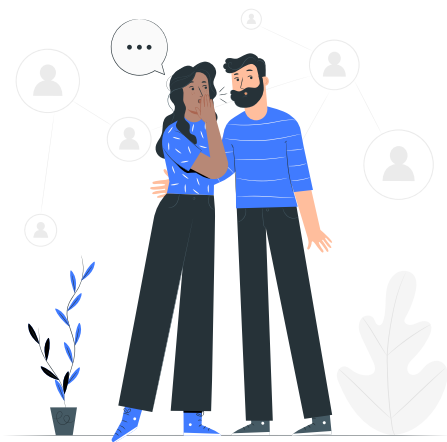
We are concerned about the issue of increasing no. of
seniors living alone...

No. of seniors living alone

Year	No.
2000	14,500
2010	27,900
2020	63,800
2030	83,000
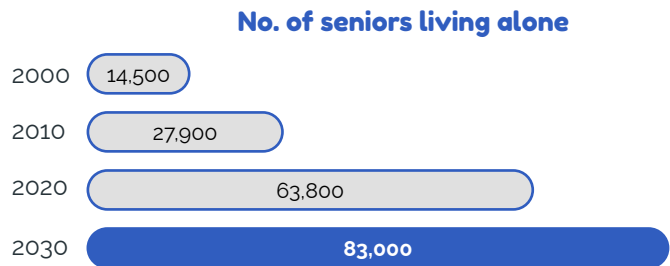
Data Source: SingStat

- In particular, we are concerned about the issue of the increasing number of seniors living alone.
- Come 2030, the number of seniors are projected to increase by almost 6x since 2000.

2000: 14% of seniors
2010: 17% of seniors
2020: 22% of seniors

… and dying alone.

SINGAPORE

Five cases of seniors in Singapore who died alone at home

OPINION

FOR SUBSCRIBERS

Why are S'pore's elderly still dying alone, undiscovered for weeks?

Undetected deaths will become more salient as S'pore's population ages and household sizes shrink. Family members and the community must look after vulnerable seniors in their midst, with technology as a useful aid.

r/Millennials · 8 mo. ago
[deleted]
Any other millennials think about dying alone if you have no kids?

Discussion

I've been watching my sick grandfather go through the process of dying right now and what he wanted was to be around his family at home, not in the hospital. All of us take turns sitting next to him.

Myself (41), and a lot of friends my age have no children. Since this has happened, I think that when I get old I will have no family and die alone. No family to spend Christmas with, no family or kids to look after me.

Does anyone else think about these kind of things? Our generation isn't having as many kids it seems for a lot of reasons but it's scary to think about spending our older years alone.

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- We are also concerned about seniors dying alone. I am sure that all of you would have observed that there are increasing reports in the news of seniors who are dying alone, undetected, in their homes.
- If you haven't, here's a short YouTube clip to catch you up to speed.

<Explore to include stories/anecdotes by Jia Ying: Elderly who passed away from heart attack (could have been saved), because his son had autism and was unable to call for help.>
<Explore to add in our survey findings>

Senior live with the wife - monitoring the senior

There is no lack of heart by the community

Community Monitoring System (CMS) currently piloted in 5-6 Divisions

1. Identify isolated seniors

2. Connect

3. Detect

Silver Generation Office (SGO)
Silver Generation Ambassadors
Silver Guardian

Provide data

Active Ageing Centres (AACs)
Volunteers

People's Association (PA)
Grassroots

Operationalise

Lions Befrienders
IM-OK Tablet

Red Cross
HoME+

HDB
Fall Detection Devices

Private Fall Detection Devices
(e.g. Aqara)
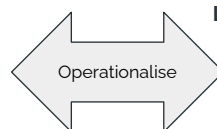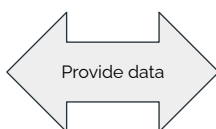
- Research - already many existing agencies and partners to help with supporting isolated seniors.
- New system by AIC that is under pilot in only 5-6 Divisions. For Divisions who are not on this system yet, it is a pretty fragmented landscape e.g. the Active Ageing Centres (AACs) doing their Befriending and Buddying (B&B) within their estate.
  https://www.straitstimes.com/singapore/politics/ndr-2023-active-ageing-centres-to-be-expanded-to-help-seniors-stay-active-and-healthy

Background info:
Identify isolated seniors:
1. Living Arrangement
a. Living Alone OR
b. Living only with Someone
with High Care Needs
2. Physical Health Ailments
3. Social Isolation / Low
4. Social Support
Silver Generation Ambassador (SGA): Launched in 2014, originally Pioneer Generation Ambassador.
https://www.todayonline.com/brandstudio/silvergenerationambassador
Silver Guardians: Launched in Apr 2024. Silver Guardian volunteers will help with the implementation of activities at Active Ageing Centres (AAC), such as befriending seniors, as well as organising and facilitating activities at the AACs. A first batch of

400 Silver Guardian volunteers has been recruited, with AIC aiming to increase this to 2,400 by 2028.

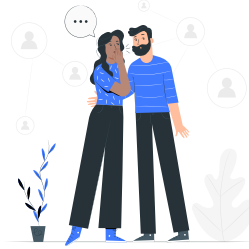https://www.channelnewsasia.com/singapore/silver-guardian-volunteers-active-ageing-age-well-sg-4245116

Red Cross HoME+:
IM-OK:

2 key concerns

Delay in communication between AACs and detection devices

Less than ideal existing detection systems
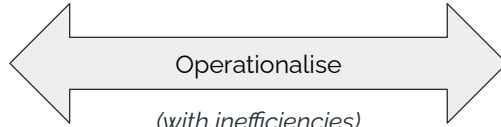
However, we identified 2 key concerns with the system.

Delay in communication between AACs and detection devices

2. Connect

Active Ageing Centres (AACs)
Central go-to node for seniors

Work with own volunteers, SGAs, Silver Guardians, PA's grassroots

Operationalise

(with inefficiencies)

3. Detect

Lions Befrienders
IM-OK Tablet <> Befrienders

HDB
Fall Detection Devices (e.g. iWow <> SG Assist)

Red Cross
HoME+ <> Red Cross

Private
(e.g. Aqara <> caregivers)

- When we took a closer look at the various detection devices at the market, we found that they were made by several different agencies, and linked to their own networks. For instance, the Red Cross HoME+ is a system of motion sensors and alert buttons installed that can be installed in a senior's home. However, any alerts are sent to Red Cross's own volunteers, and emergency services are involved for critical cases. There is a lack of updates from all of these devices directly to the AACs. Private devices such as those by Aqara also have their own apps, and alerts are given to caregivers.
- This is an issue as AACs' mission are to be **go-to central nodes within their community**, and they need to be supported to leverage existing networks and volunteers.
- With the lack of instant communication between AACs and various detection devices, updates are not timely and not coordinated, leading to **gaps in supporting seniors** and also **expend volunteers' time to make extraneous check-ins in seniors.**
- For instance, a volunteer might visit a senior, only to realise that the senior had already been admitted to hospital after falling at home and detected by Red Cross's HoME+. (While this might not sound like a major issue now, we need to recall the operating environment we are in - can we afford to have so many inefficiencies in the system in the long run?)

https://www.straitstimes.com/singapore/politics/ndr-2023-active-ageing-centres-to-be-expanded-to-help-seniors-stay-active-and-healthy

Less than ideal existing detection systems

1. Reactive rather than preventive system
Most existing detection devices work reactively: if something happens (e.g. a fall is detected or an alert button is pressed), an alert is sent. However, while this is useful to provide timely help to seniors, it does not address the concern of seniors dying alone and being undiscovered.

2. Fragmented and low adoption by isolated seniors
Myriad of seniors with differing concerns and behaviours (e.g. across regions) leads to fragmented adoption of various systems.
Device concerns: Lack of privacy, high electricity costs (lower-SES)
User behaviours: Forgetfulness
Mindsets: Seniors do not think of themselves as seniors; isolated seniors do not think of themselves as isolated seniors

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<to cut content from slide and verbally present details. Maybe all of the key concerns can be squeezed into 1 slide>

Privacy: e.g. whether data would be used by insurance companies and affect their insurance premiums
Forgetfulness: forget to check-in, forget to charge devices

Goals

All-Rounded Detection
Reactive (e.g. alert if fall detected)
Preventive (e.g. alert if no movement detected for a long period of time)

One-Common System
Centralised system and data for all devices, seniors, next-of-kin/caregivers, AACs, and volunteers
Timely and automated alerts and updates

Customisable
Best-fit device(s) selection for each senior
AI/ML-driven insights for each senior

Accessible and Scalable
Low cost
Attractive to all

PEACE OF MIND

Reactive system: e.g. alert if the senior did not move for 24h; if the senior did not reply to a telegram bot for 24h
Senior-customised system:
- Best-fit device(s) selection for each senior: e.g. telegram bot for younger seniors to check-in daily;
Senior live with the wife - monitoring the senior

Attractive to seniors. Based on a survey conducted by RySense this year, the top concern of seniors was looking good.
https://www.straitstimes.com/singapore/health/poor-health-is-topmost-concern-about-ageing-but-looking-good-is-also-important-s-pore-survey

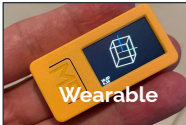**All of these for a peace of mind - so that no one falls through the gaps**
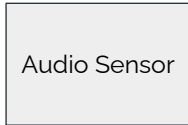
Reactive
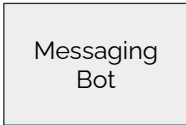
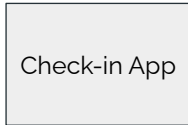Motion Sensor | Camera | Panic Button/Switch

Wearable | Audio Sensor

Preventive

Messaging Bot | Check-in App

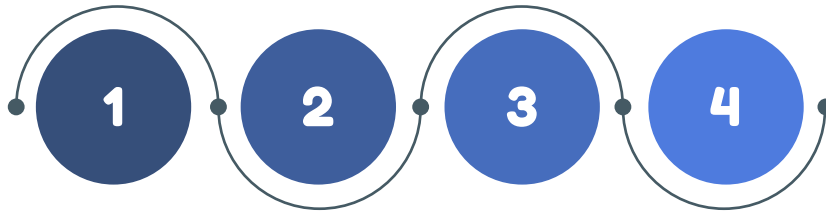Check-in Button/Switch

Let's journey together

Step 1: Select best-fit device(s) for senior

- Manual selection <u>or</u>
- AI recommender system (e.g. based on senior's demographics/ preferences/ behaviours)

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<To update pictures>

E.g. younger users could use messaging apps/ check-in apps
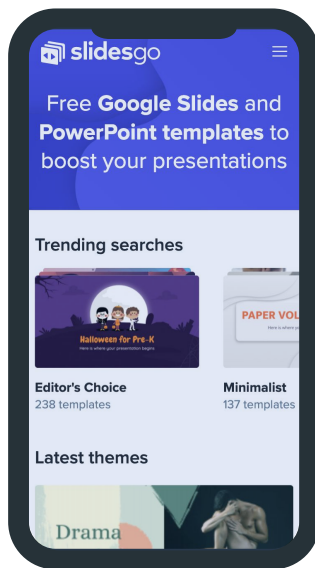Older seniors with dementia could use motion sensors

Behind-the-scenes

1

Data Uploaded to the cloud

2

Real-time monitoring of data

3

Trigger alerts
- **Default alerts:** e.g. no movement detected for 6 hours
- **AI/ML-powered alerts:** Custom alerts based on learned seniors' habits

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Send Alerts to next-of-kin/ caregivers, AACs, and SGAs/volunteers

For Next-of-kin/ Caregivers

Step 2: Setup and receive alerts
- **Customisable alerts:** E.g. frequency
- **Mode(s) of alert**: SMS/ WhatsApp/ Telegram/ Email/ Phone Call
- **Confirm safety after checking in on senior**

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<To update picture - telegram bot demo from figma?>

For AACs

Step 3: Alert and status escalation to AACs
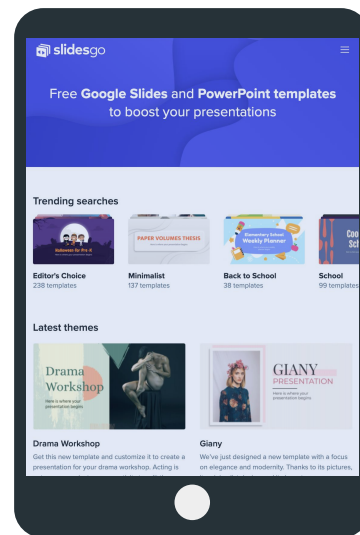
- Overview of all isolated seniors and SGAs/volunteers within own community
- Status alerts/updates

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<Update screenshot. No need working demo here>

For SGAs/ Volunteers

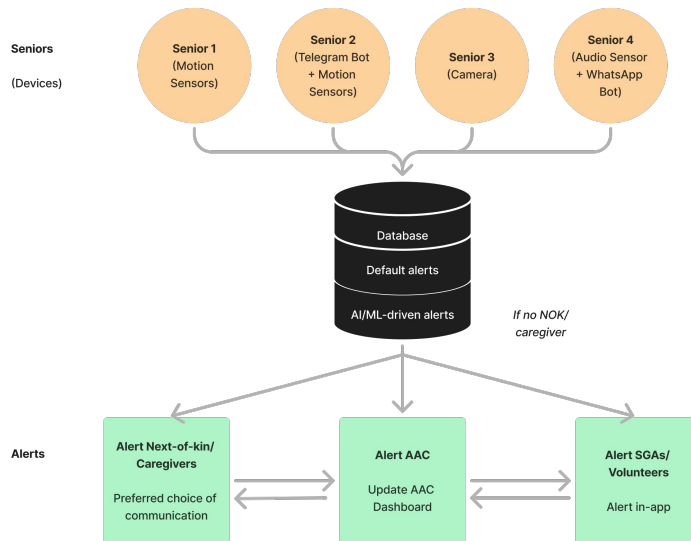**Step 4:** SGAs and Volunteers to check-in on seniors in-person

- Route optimisation based on seniors' and volunteers' locations
- Case priority alerts
- Case notes of each senior
- Confirm safety after checking in on senior

<insert demo pic>

Imagine that instead of being given an Excel sheet of seniors in your area to check-in on, you get a mobile application. You can just follow the map on your app to visit the seniors that you have been allocated to. The app will also contain case notes of each senior, input by previous volunteers from different organisations, so that there is continuity in care for each senior. It's almost like Grab.

Envisioned Architecture

Seniors

(Devices)

Senior 1 (Motion Sensors)

Senior 2 (Telegram Bot + Motion Sensors)

Senior 3 (Camera)

Senior 4 (Audio Sensor + WhatsApp Bot)

Database

Default alerts

AI/ML-driven alerts

If no NOK/ caregiver

Alerts

Alert Next-of-kin/ Caregivers

Preferred choice of communication

Alert AAC

Update AAC Dashboard

Alert SGAs/ Volunteers

Alert in-app

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<just a placeholder - to add further details where necessary and prettify>
<for discussion - to add details of servers etc? Previous winning team Noteflow had added details of how their data would be hosted on Government Commercial Cloud for data security>

Scoping in Collaboration with an AAC (Jia Ying Community Services)

Problem Validation

Do Jia Ying and their seniors need this?

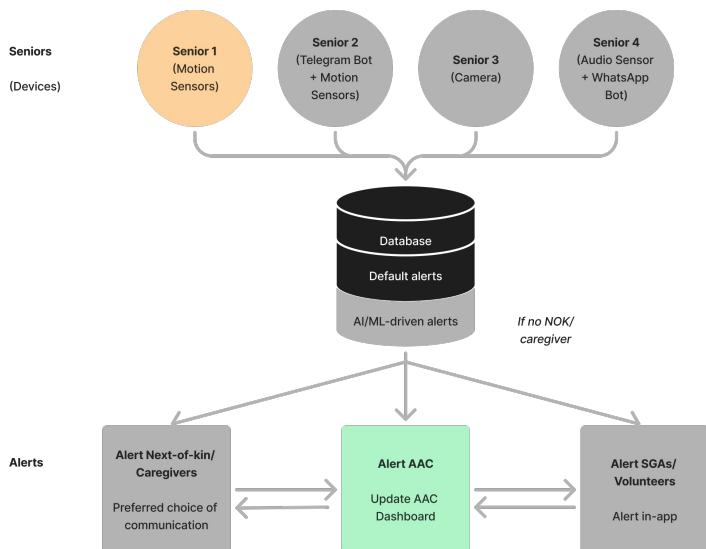## Scope for seniors

Which device(s) are best suited for their seniors?

Scope for AAC

Which platform is most suitable for them?

Jia Ying
Community
Services Society

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Phase 1: Scope for BFG 2024 in collaboration with Jia Ying

Seniors

(Devices)

Senior 1
(Motion Sensors)

Senior 2
(Telegram Bot + Motion Sensors)

Senior 3
(Camera)

Senior 4
(Audio Sensor + WhatsApp Bot)

Database

Default alerts

AI/ML-driven alerts

If no NOK/ caregiver

Alerts

Alert Next-of-kin/ Caregivers

Preferred choice of communication

Alert AAC

Update AAC Dashboard

Alert SGAs/ Volunteers

Alert in-app

Introducing...

Birdhouse
- Motion sensor
- Alert raised if no movement detected within x hours

<to eventually replace with video demo?>
<to add more details>

AAC Dashboard
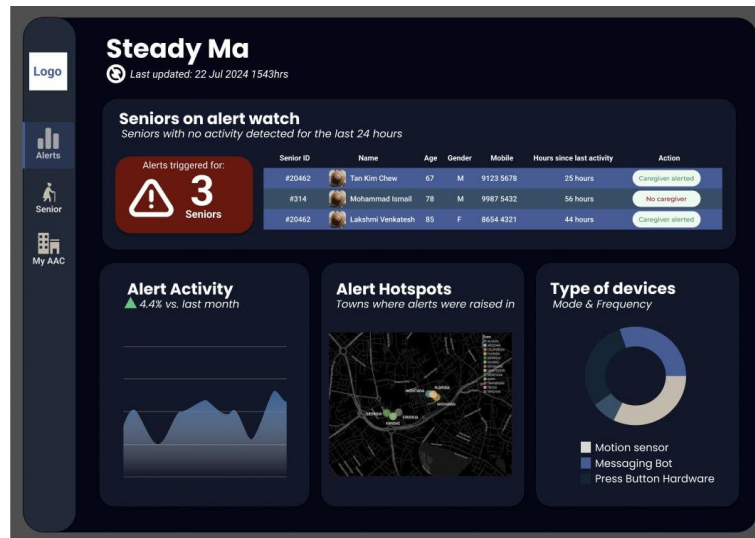
What's Next

Aug-Sep 2024 (BFG)
Pilot-Birdhouse with Jia Ying Community Services
Engage device manufacturers

Nov 2024
Expand alert system to NOK/caregivers

2025 onwards
Roll out to more AACs

Oct 2024
Expand device selection for seniors
Engage more AAC partners
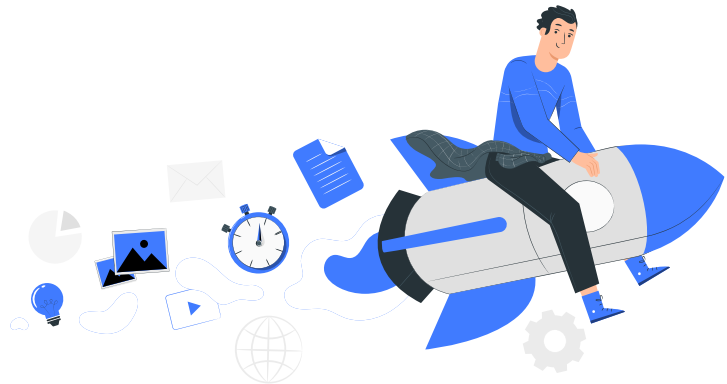
Dec 2024
Expand alert system to SGAs/volunteers

Thanks

Do you have any questions?

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