

Future Trends Report
Based on Analysis of the Future Scene in Mid-Term and Final Evaluation

STEP 1. Identify Challenges

Read the Future Scene carefully and generate ideas for challenges, concerns, and possible related problems. Choose the 5 most important challenges and write them in the space provided. Include applicable research with appropriate in-text citations.

Challenge 1

The future scenario states that elderly do not go out as most shops have been replaced with drone delivery to their homes (fact from scenario). This could result in the elderly interacting less with others, which could cause a lack of social relationships with others (inferred problem). The lack of physical and social interaction may cause the elderly to face mental health issues and poor mental wellbeing. (larger consequence)

Research

1. According to a study by Julianne Holt-Lunstad, Timothy B. Smith and J. Bradley Layron, across 308,849 participants, it was discovered that there was a 50% increased likelihood of living beyond 100 years for participants with stronger social relationships. This finding remained consistent across age, sex, initial health status, cause of death, and follow-up period. This was especially significant in the aspect of social integration (how many people one talks to on a day-to-day basis)

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (n.d.). Social Relationships and Mortality Risk: A Meta-analytic Review. Retrieved from

<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000316>

2. According to a study by Gary R. Lee and Masako Ishii-Kuntz, across 2872 participants aged 55 and older, it was noted that consistent with the hypotheses, loneliness has a major negative effect on morale, and transmits large proportions of the effects of social integration measures. Feelings of loneliness are reduced, and morale increased, by interaction with friends and, to a lesser extent, neighbors.

Lee, GR., Ishii-Kuntz, M (n.d.). Social Interaction, Loneliness, and Emotional Well-Being among the Elderly. Retrieved from

<http://journals.sagepub.com/doi/abs/10.1177/0164027587094001>

Challenge 2

The future scenario states that the jobs of the elderly are not stable as human workers can be replaced by robots (fact from scenario). This may result in many of the elderly losing their jobs and thus facing financial difficulties due to lack of stable income (inferred problem), which might lead to a large number of elderly who cannot afford basic services such as healthcare needs, and basic sanitation, causing the government to increase their expenditure on subsidies for the elderly. (larger consequence).

Research

1. A 2017 report by McKinsey & Company warns that up to 800 million workers could be replaced by machines by 2030. The report suggests that in about 60 per cent of jobs, at least one third of activities could be automated. Jobs most likely to be taken include fast-food workers, cleaners and machine-operators.

Mailonline, S. B. (2017, November 29). 800 million workers will be replaced by robots by 2030.

Retrieved from <http://www.dailymail.co.uk/sciencetech/article-5128709/800-MILLION-workers-replaced-robots-2030.html>

2. According to the Ministry of Manpower Labour Force Survey 2015, the number of women aged 60 and above who work as cleaners rose by 70% to 34,100 in 2014, from 19,800 in 2009. This means that a lot of elderly will have their jobs put at risk.

Cheatsheet: Issues Faced By The Elderly In Singapore. (n.d.). Retrieved from <https://www.nvpc.org.sg/resources/cheatsheet-issues-faced-by-the-elderly-in-singapore>

Challenge 3

The future scenario mentions that the elderly have to rely on technological gadgets which they are not comfortable with using (fact from scenario). This means that elderly are unable to use technology effectively and cannot benefit from the devices. (Inferred Problem) This would result in the elderly being disadvantaged by new technology as they cannot integrate technology into their lives (Larger Consequence).

Research

1. According to research from PewResearchCentre, elderly often do not have the tech-savviness of the youth. 77% of elderly feel that they need assistance to learn how to use technology, and 18% feel that technology is unnecessary. If the trend persists, the elderly would not only be unable to use new technology, they would also be unwilling .

Smith, A. (2014, April 03). Older Adults and Technology Use. Retrieved from <http://www.pewinternet.org/2014/04/03/older-adults-and-technology-use/>

2. An engagement session done in 2015 by the Smart Nation Programme Office (SNPO) and RSVP Singapore found that most of the elderly still had doubts about current technology and were “more isolated or unaware of technological advancements.” Elderly in present day are already struggling with technological issues and do not know of the advancements or how to use them, and as technology becomes even more advanced, the elderly could be left further behind as they do not understand more and more, since no one is helping them.

Helping seniors to utilise technology. (2015, January 26). Retrieved from <https://www.todayonline.com/singapore/helping-seniors-utilise-technology>

Challenge 4

The future scenario states that healthcare is inefficient and unhelpful (fact from scenario). This may result in many elderly not being able to afford and receive proper health care, which would result in elderly being plagued by a wide variety of health issues, leading to a decline in their wellbeing (inferred problem). This in turn means more elderly have to be taken care of, putting a further strain on the younger generation and government resources. (larger consequence)

Research

1. A report by the Straits Times in November 2016 stated that 1 in 4 Singaporeans aged 65 and above suffer from chronic health conditions. According to Professor Rhema Vaithianathan, senior research fellow at the Centre for Research on the Economics of Ageing, as Singaporeans age, they are at considerable risk of major health shocks, and these have long-term financial implications

Boh, S. (2016, November 11). 1 in 4 Singaporeans aged above 65 developed chronic disease in past year: Study. Retrieved from <https://www.straitstimes.com/singapore/one-in-four-singaporeans-aged-above-65-developed-chronic-disease-in-past-year-study>

2. According to figures from the Global Burden of Disease Study 2015, elderly in Singapore spend an average of 8 years out of an average lifespan of 82 in ill health. The study, released last year, was by the University of Washington's Institute for Health Metrics and Evaluation and is one of the most comprehensive and up-to-date analyses of the state of the world's health. This means that almost all the elderly in Singapore are bound to face ill health and would require healthcare. If healthcare is unaffordable or inaccessible, many elderly would be affected

Singaporeans living longer, but need to shorten years spent in ill health. (2017, September.) Retrieved from <https://www.todayonline.com/singapore/one-segment-life-cut-short>

Challenge 5

The future scenario states that the elderly centres are in poor condition and not run properly (fact from scenario). This means that elderly do not have places to go to in order to relax and enjoy themselves, and have to stay at home and lead sedentary lifestyles. (inferred problem) This could result in degeneration of the mind and cause the elderly to develop mental and physical illnesses. (larger consequences)

Research

1. According to Sunrise Senior Living, research shows that a sedentary lifestyle can be detrimental to the health of the elderly. Lack of physical activity can lead to loss of muscle tissue, causing increased difficulty in performing activities of daily living. It can also result in poor bone health and increased likelihood of depression

Is a sedentary lifestyle as dangerous to seniors as smoking? . (n.d.). Retrieved from <https://www.sunriseseniorliving.com/blog/september-2017/is-a-sedentary-lifestyle-as-dangerous-to-seniors-as-smoking.aspx>

STEP 2. Select a Fundamental Problem

Using the challenges listed in Step 1, identify a problem of major importance to the Future Scene situation. Write your Underlying Problem making sure your question clearly explains the action that will be taken and the desired results/goal of that action.

Incorporating Challenge(s) #1,2,4

Underlying Problem

Given that the elderly in 2030 will face mental and physical health problems because of the lack of accessibility to healthcare services and the older generation's lack of social interaction (condition phrase), how might we improve the physical and social health of the elderly (key verb phrase) , so that they do not suffer from adverse health problems (purpose) in Singapore in year 2030 and beyond. (future scene parameters)

STEP 3. Produce Solution Ideas

Generate solution ideas to the Underlying Problem in Step 2. Choose the 5 most effective solutions and write the elaborated ideas in the space provided. Include applicable research with appropriate in-text citations.

Solution 1

We, the Ministry of Elderly Welfare, will work with various community and resource centres around Singapore to ensure that comprehensive activities are provided within a single building for the elderly to improve their social and physical health by allowing them to interact with others of the same age group more regularly and conveniently. This policy will be implemented across Singapore and tabled for parliamentary discussion by 2030.

Research

1. According to a report by Fayette Senior Services, loneliness experienced by seniors can result in depression, which will make it even harder for seniors to go out of their homes.¹ Interacting with others at senior centres can improve seniors' happiness. The happiest seniors were generally the healthiest. Social activity can lower rates of Alzheimer's, blood pressure, and prevent some illnesses.

The importance of Social Interaction for Seniors. (2016, March 30). Retrieved from <http://www.fayss.org/importance-social-interaction-seniors>

Solution 2

We, the Ministry of Elderly Welfare, will work with the Ministry of Technology and the Ministry of Health to ensure that electronic wristbands can be developed and issued to elderly citizens. The devices will be able to provide autonomous health checks for the elderly by scanning their body and monitoring heart rate. The device will contact a doctor for follow up via hologram should they be diagnosed with a disease, amongst other functions. This scheme will be implemented across Singapore and tabled for parliamentary discussion by 2030.

Research

1. According to HealthIt, automated healthcare can reduce labour, elevate employees to higher-functioning roles, improve quality, efficiency and consistency of healthcare and reduce healthcare cost. Therefore, healthcare will be made more effective when automation is introduced to a certain extent

Dias, J. (2014, December 15). 6 Big Benefits of Applying Automation to Healthcare. Retrieved from <https://hitconsultant.net/2014/07/21/6-big-benefits-of-applying-automation-to-healthcare/>

Solution 3

We, the Ministry of Elderly Welfare, will work with the Ministry of Communications and Information and the Ministry of Health to ensure that the development of a medical consultation application can be released for the elderly. This will allow the elderly to have affordable healthcare services coming to their homes rather than them having to go out to receive healthcare by broadcasting the elderly's location and allowing doctors to visit these locations to help patients. This application will be made available across Singapore and tabled for parliamentary discussion by 2030.

Research

1. According to Keystone Health, house call doctors benefits the elderly as in-home treatment is patient-centric and more personalised as treatment will be based on their needs. Elderly who are not in suitable physical condition also do not need to leave their house, therefore treatment will be more effective

The Benefits of Medical House Calls for the Elderly. (2017, October 28). Retrieved from <https://keystone.health/medical-house-call-benefits>

Solution 4

We, the Ministry of Elderly Welfare, will work with the Ministry of Communications and Information Singapore as well as various non-profit organisation across Singapore to ensure that volunteers are able to interact with lonely elderly people from their homes via hologram to keep them company and improve their social health. This scheme will be implemented across Singapore and tabled for parliamentary discussion by 2030.

Research

1. According to a report by Stanford University, interaction between youth and elderly give the elderly emotional satisfaction. Such interaction is also associated to better physical health and cognitive performance

Stanford University. (2017, September 06). Bringing old and young together benefits both | Stanford News. Retrieved from <https://news.stanford.edu/2016/09/08/older-people-offer-resource-children-need-stanford-report-says/>

2. According to Scientific American, social interaction with the youth can improve the older generation's cognitive abilities, vascular health and even increase their lifespan. The article states that a clinical program in which the elderly engage in communal exercise sessions with college students has stabilised cognitive decline and improved the elderly's moods.

Westly, E. (2008, August 01). Socializing with Youth Improves the Elderly's Health, Life Span. Retrieved from <https://www.scientificamerican.com/article/talk-to-teens-live-longer/>

Solution 5

We, the Ministry of Elderly Welfare, will work with the Ministry of Communications and Information to set-up a virtual reality game in each home that can use virtual reality to bring elderly to different places around Singapore to complete a set of challenges. This would ensure that the elderly achieve mental and physical stimulation regardless of whether they leave their house. . This holographic game would be implemented across all homes comprising of elderly and tabled for parliamentary discussion by 2030.

Research

1. According to the article 'Brain Games: Do they really work?' published in the Scientific American, living in an enriched environment with lots of mental stimulation produces positive brain changes, which poses huge potential for tapping into your own neuroplasticity (that is, the brain's ability to change itself by remodeling nerve cell connections after experience) to enhance mental fitness and prevent age-related memory decline. Furthermore, several brilliant neuroscientists have, in recent years, served as the designers of the best brain games on the market. Hence their research shows that playing brain games stimulates your brain cells positively hence slowing down dementia

Scientific American (2009, April 9) Brain Games: Do They Really Work? Retrieved from:
<https://www.scientificamerican.com/article/brain-games-do-they-really/>

STEP 4a. Select Criteria

Generate criteria to determine which solution idea does the best job of solving your Underlying Problem and/or addressing the Future Scene situation. Select the 3 most important criteria for measuring solution ideas and write them in the spaces provided.

Criterion 1

Which solution is the fastest to implement for the government so that the elderly can receive enhanced healthcare promptly?

Criterion 2

Which solution is the most sustainable for the government and organisations involved in executing the solution, so that long lasting improvements to the healthcare of the elderly can be made?

Criterion 3

Which solution will be the easiest to utilize for the elderly, so that the most number of elderly would benefit from the scheme?

STEP 4b. Apply Criteria

List the solution ideas from Step 3 on the grid. Use each criterion to rank the solutions on a scale from 1 (poorest) to 5 (best). The weighting for one important criterion may be doubled if necessary.

Step 3 Sol'n #	Solution Idea	Criteria			Total
		1	2	3	
#1	Community centres with comprehensive facilities	1	1	2	4
#2	Electronic wristbands for healthcare	3	5	5	13
#3	Medical consultation app	5	2	1	8
#4	Interaction between youth and elderly via hologram	2	3	4	9
#5	Virtual reality board game	4	4	3	11

STEP 5. Develop an Action Plan and Evaluate its Feasibility

Develop your top-scoring solution idea into an Action Plan. Thoroughly explain how the Underlying Problem is solved, how the plan will be implemented, and how the Future Scene will be affected. Explain how this Action Plan is feasible with research consulted.

Action Plan derived from Solution #2

Action Plan

We, the Ministry of Elderly Welfare, together with the Ministry of Health and Ministry of Technology, will create and distribute multi-functional electronic wristbands, entitled 'MediBand', for elderly across Singapore to improve their physical and social health. MediBand will be able to provide automated health checkups for elderly, alert hospital in case of emergency and allow communication with others via hologram, can be used for elderly-youth interaction or consultation with doctors. MediBand will be distributed free of charge to all citizens aged above 60. Design, production and testing will of MediBand will start from 2030 and the nationwide distribution of MediBand will be completed by 2040.

Implementation timeline

This is our implementation timeline of our action plan:

1. 2030: Parliament decides to implement the production and distribution of MediBand to improve elderly healthcare
2. 2033: Electronic wristband is designed by Ministry of Health and Ministry of Technology as well as several partner companies and organisations
3. 2034: Selected hospitals and clinics are registered in the servers for the electronic wristband for a trial-run of 8 to 10 months
4. 2035: Feedback is collected from users and participating hospitals for improvements
5. 2036: Government debates the implementation of MediBand based on user feedback
6. 2037: MediBands (improved version) are mass-produced
7. 2038: Distribution of MediBand begins in a cluster of neighbourhoods, slowly expanding district by district
8. 2040: MediBands are distributed amongst all elderly in Singapore via community centres and door to door visits

Addressing our Key Verb Phrase

- Given that the Key Verb Phrase in our fundamental problem is “improve the physical and social health of the elderly”, our action plan and solution addresses this since MediBand ensures that the elderly do not face adverse health problems as they are able to give a detailed status of the health of the elderly, which allows them to receive the treatment they require.
- MediBand also allows doctors to provide consultation after a diagnosis has been made, which allows diseases to be treated and cured as soon as possible so that they do not become more severe.
- On the aspect of social health, MediBand also ensures that real-time communication takes place between the elderly and doctors or youths, if face-to-face interaction is not.
- This ensures the social health of the elderly is maintained through social interaction with real human beings, in real time.

Impact & Consequences

The implementation of the MediBand would have a positive impact on the healthcare industry. The automated health checks are an extreme convenience to the elderly as they are able to receive health checks and medical consultation without having to travel outside of their home. Due to this, hospitals and clinics will be less crowded as there will be fewer physical checkups, which improves the efficiency of healthcare and those who truly need it will be able to receive it faster. It also reduces the manpower constraint, which is beneficial due to Singapore’s shrinking and aging workforce. Less manpower constraint also means that more time can be dedicated to the treatment of patients. Healthcare costs can also be lowered due to lower demand for checkups, allowing for more affordable healthcare for the elderly.

Humanity

Our action plan does not cause any form of mental or physical harm to the elderly. The MediBand will also be free of charge to the elderly and is optional, which means that the elderly are not forced to purchase an expensive product that they may not want to use.

Resistors and Supporters

We believe public hospitals and clinics would support this plan of action, as well as the government. Potential resistors include elderly may be stubborn and unwilling to use the MediBand, as well as private clinics or corporations who feel that their business will be affected by the introduction of the MediBand

Potential Obstacles

Some potential obstacles include:

- Some of the elderly may be uncomfortable with technology and will thus be unwilling to use the MediBand
- Companies which already produce or create part of the functions of the MediBand might increase competition so as to not lose customers/protest against government (eg. a company that manufactures holograms specifically might create a legal dispute over the technology used in the bands)
- Mass production of MediBand can be costly

Solutions

After some brainstorming, we thought of the following methods to address each of the potential obstacles:

- Workshops can be held in the community centres where these MediBands are distributed to teach elderly how to use the wristband and clear their doubts
- Government can cooperate with companies that produce existing technology
- Money from healthcare subsidies can be used to pay for the MediBand

Research (for Action Plan and Evaluation)

1. According to an article by Human Resource in Asia, the use of technology in hospitals has managed to streamline back-end work. In Tan Tock Seng Hospital, wearable devices free nurses from administrative tasks and allow them to dedicate 35% of their time on patients

Using Technology to Raise Productivity: Key Focus of MOM's 2020 Healthcare Manpower Plan. (2016, November 29). Retrieved from <http://www.hrinasia.com/hr-news/using-technology-to-raise-productivity-key-focus-of-moms-2020-healthcare-manpower-plan/>

2. According to Medium, automated health exams allow for more cost effective healthcare. It also allows people to receive regular, basic health checks without having to leave the comfort of their homes. Technology allows data from the health check to be sent to doctors, who can then provide professional advice for the patient.

Krach, K. (2017, July 18). 10 Ways Technology Is Improving Health Care – Keith Krach – Medium. Retrieved from <https://medium.com/@KeithKrach/10-ways-technology-is-improving-health-care-50fc25a92b1b>

3. According to the American Institute of Medical Sciences and Education, the use of technology for healthcare can improve public health via collecting healthcare data and records. Technology can also reduce the cost of healthcare and increase efficiency.

The Impact of Technology on Healthcare. (2018, April 26). Retrieved from <https://www.aimseducation.edu/blog/the-impact-of-technology-on-healthcare/>

4. According to an article by MIT Technology Review, voice analysing technology can be used to diagnose diseases. Such diseases include Parkinson's, dementia and coronary heart disease. The availability of such technology proves that the automated health checks to be implemented in our action plan are technologically feasible.

Mullin, E. (2017, January 20). Talking into an app could help your doctors diagnose you. Retrieved from <https://www.technologyreview.com/s/603200/voice-analysis-tech-could-diagnose-disease/>

5. According to an article by The Straits Times, tech courses have been organised in community centres by the People's Association in order to get the elderly comfortable with technology, and these courses have received positive response. This shows that if the elderly feel uncomfortable about using the MediBand, holding workshops can be an effective solution.

Ong, A. (2016, April 05). Tech courses help seniors get Smart Nation-ready. Retrieved from <https://www.straitstimes.com/singapore/tech-courses-get-seniors-get-smart-nation-ready>

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Cite the sources you consulted using the APA format.

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<https://www.nvpc.org.sg/resources/cheatsheet-issues-faced-by-the-elderly-in-singapore>

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<http://www.pewinternet.org/2014/04/03/older-adults-and-technology-use/>

C3R2:

Helping seniors to utilise technology. (2015, January 26). Retrieved from

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C4R1:

Boh, S. (2016, November 11). *1 in 4 Singaporeans aged above 65 developed chronic disease in past year: Study*. Retrieved from

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C4R2:

Singaporeans living longer, but need to shorten years spent in ill health. (2017, September.) Retrieved from <https://www.todayonline.com/singapore/one-segment-life-cut-short>

C5R1:

Is a sedentary lifestyle as dangerous to seniors as smoking? . (n.d.). Retrieved from <https://www.sunriseseniorliving.com/blog/september-2017/is-a-sedentary-lifestyle-as-dangerous-to-seniors-as-smoking.aspx>

S1R1:

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S2R1:

Dias, J. (2014, December 15). 6 Big Benefits of Applying Automation to Healthcare. Retrieved from <https://hitconsultant.net/2014/07/21/6-big-benefits-of-applying-automation-to-healthcare/>

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S5R1:

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Action Plan:

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