UTM

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Design and Thinking Report

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Definition of design thinking

Design thinking is often described as a mindset an individual adopt in order to approach a human centered problem, using problem solving and critical thinking. Tim Brown is accredited to popularize in modern business world in a published article in the Harvard Business Review. What makes design thinking unique compared to other methods is that, design thinking approach is more solution-based and user-center rather than problem-based which means it focuses on solutions, rather than the problem itself.

Based on our research as well as referring to Harvard Business School there are five phases:

- Empathize: understanding the user problems
- Clarify: narrowing the focus
- Ideate: overcoming technical difficulty
- Develop: developing concept design

- Implement: implementing the designee

I . Empathize

The first phase, empathize is where often design thinking process begins. Empathize by definition is the ability of putting aside already existing assumptions to understand the problems and issues to a client, to figure out solutions. This phase is very important as the designers must come up with based ideas for the final product.

Collecting the data necessary can be done through various of methods which can include: online surveys, interviews, looking up existing data and so on. Our team have decided on interview with people, and to ensure the utmost comfort to our interview, as well as, maximizing our data collection, our interviewer adopted these traits:

I. Listening attentively: by giving full attention and avoiding interruption
II. Acknowledgment of emotions: showing understanding and accepting of emotions
III. Ask questions: asking open ended questions
IV. Responding with understanding: respond to other feelings with understanding

The Interview

For our interview we interviewed our fellow student on some the long-held fears for their loved, such as their grandmothers, and their health and safety, as it is impractical to hold contact all day from their busy schedules, so we can come up with practical solutions. Each and every interviewee we asked them all the same following questions:

- Do your grandparents live alone?

- How often do you or your parents visit them each month or week?

- What worries you have the most every time you think about your grandparents living alone?

- What solutions do you currently use to check in on your grandparents? Do you use phone calls, home visits, or something else?

- What do you think about installing smart CCTV in your grandparents' house? Are you okay with it, or do you think it may be an invasion of privacy?

- If there were an emergency involving your grandparents, how would you prefer to be notified or alerted?

- Lastly, if you could design your ideal solution to help your grandparents stay safe while living alone, what features would you include?

First Interviewee
Name: Daniel Iman Haqimie bin Yusoff
Age: 19
Occupation: First year student in Network and Security

Mr. Daniel has answered that although he lives near his parents, he still visits his parents once a week. He also mentioned that his usual form of contact is through phone calls, as well as, expressing his deep worries for his grandparents injuring themselves, especially since they live alone, and would like to keep tabs on their health and monitoring them, including being able to be notified using a warning signal. Daniel also mentioned he doesn't mind installing CCTV cameras in his grandparents' house as long no one outside of the family is monitoring them.

Second Interviewee
Name: Ahmad Munif bin Baharum
Age: 19
Occupation: First year student in Network and Security

Mr. Munif has answered that he doesn't get many chances to visit his parents, and usually keeps in contact through phone calls, he believes that installing a camera might be the best option in keeping tabs on his grandparents, since his grandparents also live alone, although he admits that it may be uncomfortable at first, as it might invade some of their privacy, he believes it is the best solution, and lastly would like to a notification to be sent in case of emergencies.

Third Interviewee
Name: Najmuddin bin Kamaruddin
Age: 19
Occupation: First year student in Network and Security

Mr. Najmuddin replied to our questions by, stating that he checks up on his parents and grandparents through visits quite frequently per month, however he still worries for safety, so he believes that installing CCTV cameras are a great solution without feeling his invading their privacy, he also mentioned that would be convenient to get notified in case of any emergency.

II. Clarify

After our intriguing interview with our interviewees, the next step of design thinking would be clarified. Clarify by definition is clearing up our objectives to have straight direction, in this case clarify would be take all key point in each interview and identify the problems in it.

- Infrequent visits with relatives over a long stretch of time between personal life.

- Worries over relatives living alone from any other family member, majority being grandparents.

- Inability to reach to them in case of any emergency such, falling, medical emergencies, and attempt break in.

III. Ideate

Ideate is often the next step, which involves tackling all of these problem and issues using technical methods, as well as, overcome any technical issues related.

After thinking and consideration for each and every interviewee worries, we came up with a design that may appear to be a normal CCTV camera, but it is filled with many different features that has the ability to tackle all of the different challenges.

One of the more common problems between each interviewee, that their grandparents live alone, and their inability to dedicate as much as of their time as they wanted visiting them, which led to most having to compromising to phone or video calls between. Which isn't perfect often time, perhaps due to poor cellular communication or any other reason. Our CCTV camera which is named SSG (Smart SafeGaurd) CCTV, has the ability to keep tags on their grandparents throughout the day to ensure their safety.

Another common problem, the worry over their relatives, especially grandparents, safety and health, especially knowing it might happen without our clients being aware of what might be a life threatening situation, such as, an attempt of breaking in by a thief that could hold them at gunpoint or endanger them in general, a sudden heart attack which might be fatal if left untreated quickly, accidental fire that might start due to leaving a oven or a stove unattended. SSG CCTV can reduce these at a large scale, and its due to the fact that SSG provides 24-hour long watch without any issues, as well as, keep track of our client's grandparents in case of any emergencies such as the sudden heart attack, SSG can quickly notify the

emergency station and try to get them the necessary help at a shorter time. Which be the difference between life and death for our grandparents.

SSG also has another feature which allows it detach from the wall to be installed onto a ball, which allows SSG to have full range of moving around and ensuring the protection from any accidental fires from accelerating too much, by notifying the authority about it.

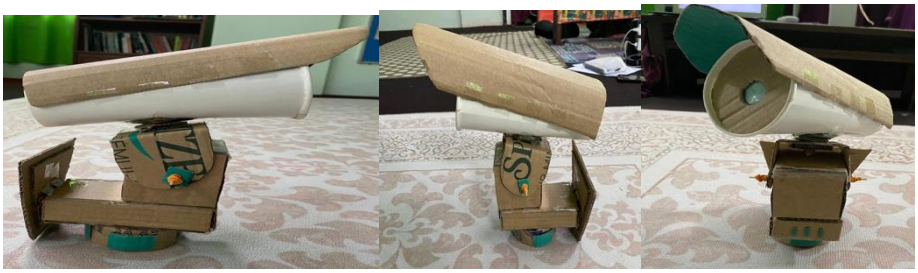
SSG includes another feature of detecting any thief that may attempt to enter by scanning the area of any suspicious attempts around the house, which then SSG would sound the alarm built in it and calling the police as well.

SSG also sends notification towards the family members via their phone, to notify them of the current news of their grandparents.

While SSG may have similar features to a normal CCTV, it has many different features that sets it apart from most other CCTV available in the market, and allows a peace of mind for our clients.

IV. Develop

The developing phase is the next in design thinking. It is the phase our collective data from our consumers, as well as, the developing idea begins to take form.



The design of the CCTV

The logo of the company

V. Implement

The implementation stage is where our ideas get into action. The first thing we need to do is develop a project timeline, highlighting a well-described step for every action taken. It would help in identifying everyone's role in the team and what task each of them should do. Key milestones would be the development completion of software, hardware installation, and testing.

This is a collaborative phase, and frequent meetings are required to keep the team updated with any challenges arising. Communication will help us adjust quickly to whatever issues arise.

Quality assurance will also be assured. We will test hardware and software to make sure they work together well. Tests of different kinds will be made to catch any bugs or problems before the launch.

Another priority will be the training of the users. We will develop user manuals and guides that will help people understand how to use the SSG CCTV system. We are also going to train family members and caregivers so that they may feel confident in using the system.

The incorporation of user feedback will be done after implementation and functioning, and the same will be used

to monitor the usability of the system. The gathered feedback will go a long way in effecting improvement in needed areas for the SSG CCTV system.

VI. Testing

During our testing phase, we got feedback from users who were satisfied with the SSG CCTV system. However, when we presented the product to our classmates and teacher, they provided us with valuable insights that showed several areas of improvement.

Specific suggestions included:

Integration with existing home security systems: Customers felt that the SSG CCTV system needed to be integrated with popular home security platforms, and this would yield a better customer experience. We can provide greater convenience and satisfaction to users if we let them control all of their security features from the same place.

Improved Notification Options: The users wanted to have different settings for notifications. Granting the user the ability to choose how and when they get notified-for example, via SMS, email, or in-app notifications-would enhance the overall user experience and ensure that they are always informed in the way that best suits them.

Offer Tutorial Feature: A number of them would recommend adding an interactive tutorial or onboarding process that might walk the new user through the features of the system. This will make the users comfortable and confident with the use of the product right from the very beginning.

Feedback Mechanism: Inclusion of a built-in feedback mechanism will let the users report issues or suggest improvements easily from within the application, thus helping to continuously improve on user experiences.

VI I. Reflections

By **Nur Rihhadatul Arifah Binti Mohd Nazaruddin**
During this project, I realized how important it is to know the needs of the users. The interviews with families made me understand just how concerned they were with the safety of their elderly relatives who were living alone. When listening to their concerns, I knew our design would be able to actually help them in everyday life. This experience taught me the need to involve user feedback in every stage of our design process. I also learned that communication and listening skills are important in design. When we really listen to what users say, we are able to provide better solutions for them.

By **Nurul Ain Binti Mohd Sani**
It was, however, an exceptional avenue to develop my problem-solving skills in this project. But ideation was admittedly intellectually stimulating since it really pressed our creative abilities on how to address the safety issues posed by the people we interviewed. I also enjoyed those brainstorming sessions whereby everything that would pop into someone's mind regardless of how foolish that idea seemed, was accepted. This collaborative environment allowed us to explore a variety of possibilities and led to creative solutions. I now feel more confident in contributing ideas in a team setting and thinking outside the box, especially under pressure.

By **Abrar Altag Mostafa Nourelgalil**
As a technical member of the team, my role was focused on the development phase. This project taught me the importance of integrating user-centered design principles into our technical specifications. While working on the features of the SSG CCTV system, I had to balance user needs with what was technically feasible. The feedback from our team and potential users was invaluable in guiding our decisions. I learned that in order to create technology that effectively addresses real-world problems, successful product development is a must. This experience heightened my awareness of the need for technology that is both functional and user-friendly.

By **Mutallib Afsahov**
The testing was quite an educating phase for me. Interacting with users and getting feedback on the prototype taught me the importance of testing functionality and user experience. I realized we had to understand not only how users work with our product but also how they feel about the product. Suggestions we received from the test users paved the way rather clearly for its improvement. This reaffirmed my idea that user testing throughout the design process was more important than just a step right before launching. I now appreciate being open to feedback and making changes for improvement to the user's experience.

By **Anika Maliha**
One of the biggest takeaways from this project was the use of collaboration within a team. Each person came from a different angle and contributed another skill that added to our discussions and helped in perfecting our final product. I loved working with my peers down from the empathize to the ideate phase, where we were sharing what was in our minds and building on each other's thoughts. This made

me appreciate how varied standpoints eventually drive innovative solutions. I also learned opening oneself to other's ideas and cooperation results in more workable design. In a team, one has to sort out issues, or reach successful milestones through team work

By **Hamza Ahmed Ahmed Mohamed ElKhoudary**
I had found adaptiveness as an important factor through which design thinking occurs. With each different phase, our ideas changed as we got feedback from users and insights from our discussions. I learned to be open to change and that any setbacks were actually learning opportunities. In this project, I learned flexibility within design allows us to better meet the needs of the users. Now, I feel that this would be more comfortable to amend my ideas accordingly after feedback or approach problems with an open mind. This will certainly help me later in my future work while I am progressing in acquiring my skills in design and engineering.

VII. References

These are the websites that we have referenced on our report:

Havard business school: https://online.hbs.edu/blog/post/what-is-design-thinking
Ama.org: https://www.ama.org/marketing-news/the-5-phases-of-design-thinking/
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