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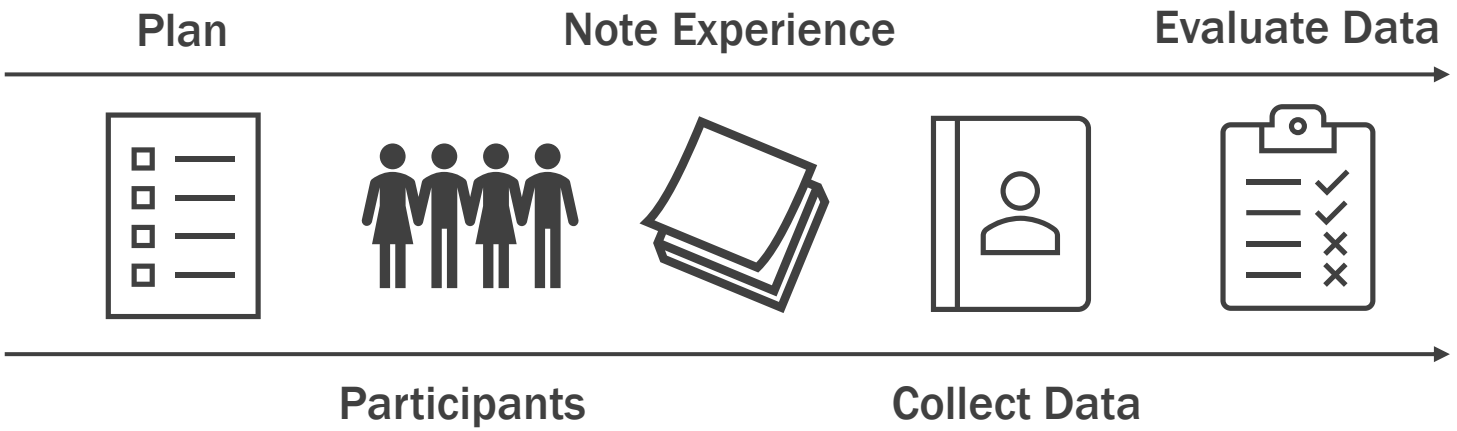
# RE – IMAGINING OF ANKI'S "VECTOR"

# Rationale

Building upon the feedback received from our clients, the decision had been made to re-consider the data gathering methodology. Due to the technology being an interactive device, performing a usability test would yield potent feedback. This research would "(Niranjanamurthy M1 , Archikam Nagaraj2 , Himaja Gattu3 , Puneeth K Shetty4 (2014)), "**Discovers the real demands and tasks of the user early in the design process.**" (p84). A set of questions will be developed for each participant to fill out during their time with the device. Each participant will have a day with Vector, after being informed on its functionality. Data will be collected after each noted experience is completed, and once they have been completed, the data will be evaluated and used for foundation for the re-design.



# Data collection

Based on the 5 elements of usability testing, the questions include:

- How easy was it to set up Vector?
- How responsive was vector to commands and the surrounding?
- What was the fondest memory you had of vector?
- What did you encounter that didn't work?
- Is there anything you wish Vector could do that it couldn't?

Figure 1

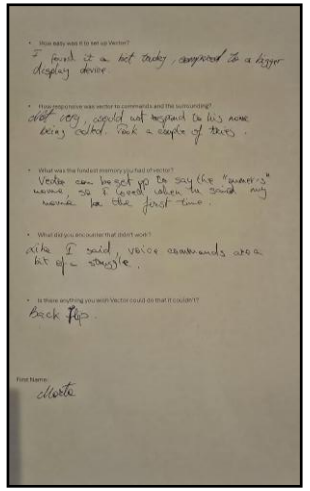
1. **Learnability:** How easy is it for users to accomplish basic tasks the first time they encounter the design?
2. **Efficiency:** How fast can experienced users accomplish tasks?
3. **Memorability :** When users return to the design after a period of not using it, does the user recollect how to use it effectively the next time, or does the user have to start learning everything? As newly.
4. **Errors:** How many errors do users make, how critical are these errors and how easily can they recover from the errors?
5. **Satisfaction:** How much does the user like using the system?

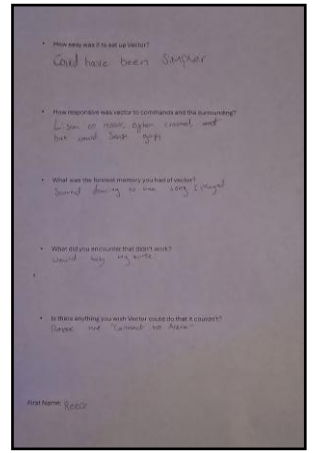
Following the five elements from a UX Research paper
"Niranjanamurthy M1 , Archikam Nagaraj2 , Himaja Gattu3 , Puneeth K Shetty4 (2014)"

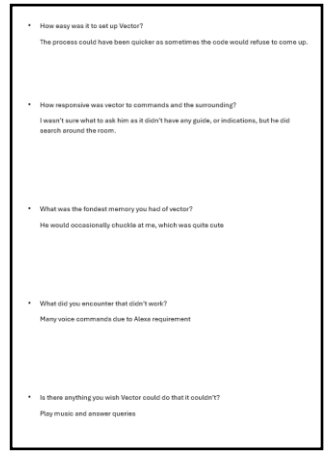
# Data collection

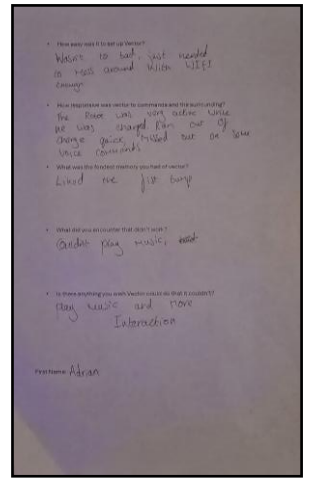
The data was collected from each participant after their time with vector. Each spent a day with vector before the device was passed on.

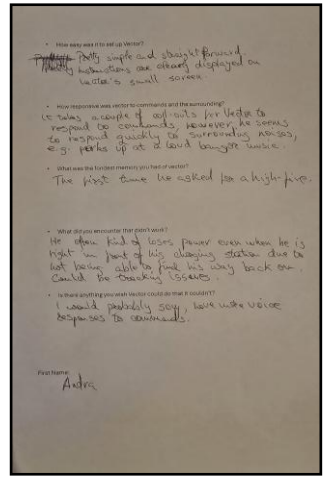
This device was owned personally owned. Which had everything the new vector would have, that being the box, charging port and Cube for interaction.











# Data collection Evaluation

Advantages

After reviewing the data collected, the personal interaction with the device is what the participants liked the most:

“Dancing to the sound I played”
“Liked the Fist bump”
“Said my name”
“Asked for a high five”

Andra said that “Responded to sounds quickly”

Marta said that “Around A lot”

What this tells us

Due to the feedback sheets, we have found which interactions the participants enjoyed the most. To note, 2 participants enjoyed the functionality to fist bump, or interact with the device in a physical way, much like a pet. Another noted that the “Listen” functionality of the device was fun, were the device listens for beats which it dances too. Finally, another noted they liked the personal features like name calling. For this we can deduce what the users want and expect from the device so that’s these features can be built upon to carry over to the re-design.

# Data collection Evaluation

Disadvantages

After reviewing the data collected, we can see what the participants didn't like:

Setting up – 4 out of 5 users disliked the process of setting up the device.

Battery – 2 users noted that the battery life "ran out of charge quick"

Missed Commands – 3 users noted issues with the device listening out for the users' voice.

What users wish vector could do:

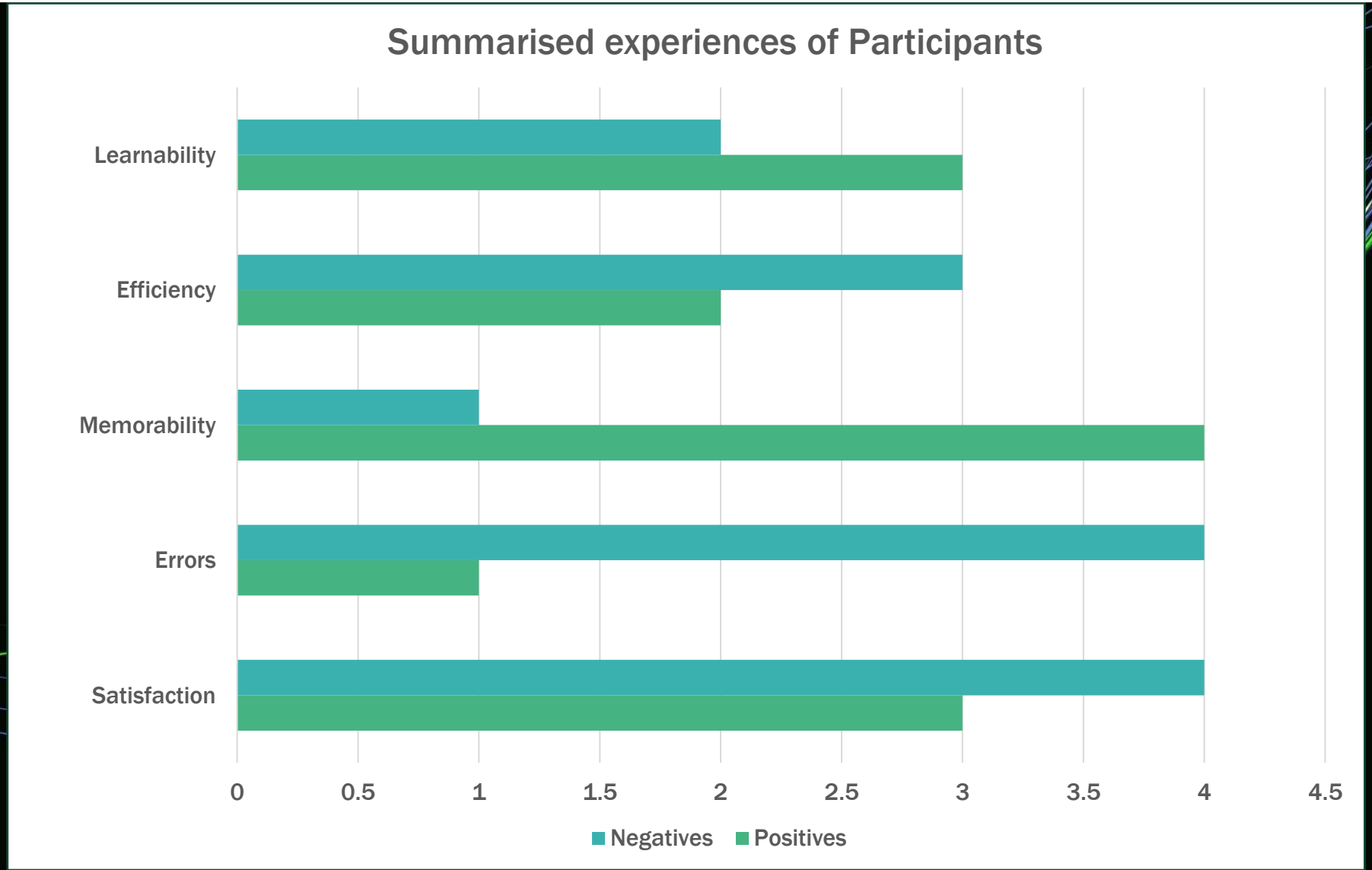
Andra said "More voice responses"

Marta said "Backflip"

Adrian and Jesse said "play music"

Reece said "Remove the connect to Alexa" requirement for advanced voice commands

# Data collection Evaluation



# Data collection Evaluation Summary

Agreeing with the research conducted by a team in Austria during the pandemic about life with vector:

**(Tsiourti, Pillinger, Weiss. (2020)**
“novelty effects that promote initial engagement with robots typically fade away after a short period of time” **(P2)**

Each change made to the device will promote engagement over a longer course than the existing features. Following in suite with popular voice assistants like Amazon Alexa.

**In 2019 it was found in a survey conducted by Statista that** “62 percent of respondents indicated that they are using Alexa regularly to play music or radio” **(Alexander Kunst (2019))**

From this information we can deduce several changes that can be made to the robot to improve the HCI.

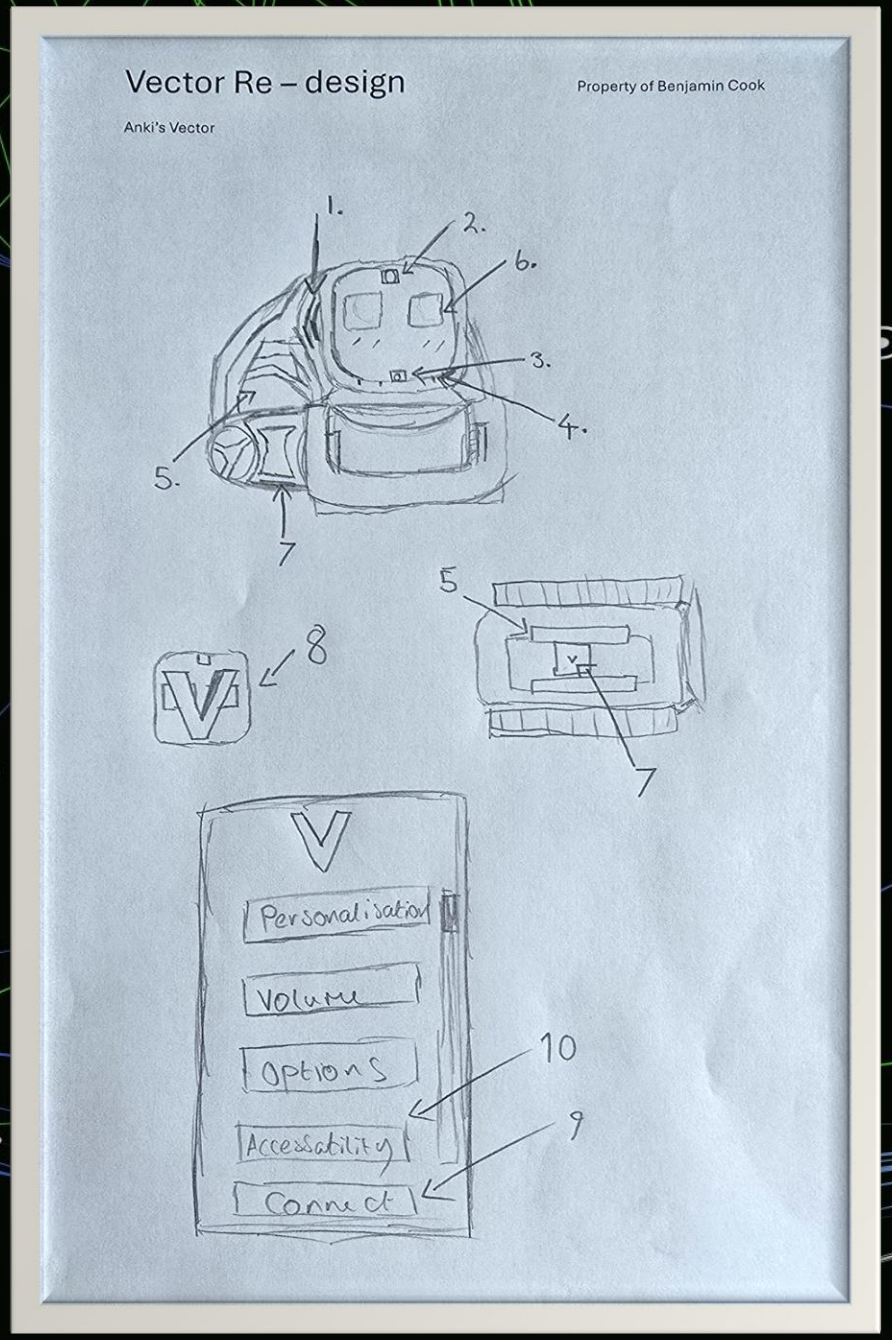
Adding New Voice Assistant Technology
This includes features like music playing, browsing the web and answering queries

Re - imagined connection process
A Revamp of how the user connects to the device, including a new simple app to connect to vector in a personal way.

New Hearing module
Users noted that the bot struggled to listen at times, due to this a new Hearing module would be potent in enhancing the UX.

Battery Life
The battery life of the product was limiting the UX, resulting in displeased participants, due to this a new battery is considered, with a new feature to charge fully when vector isn’t “hearing”.

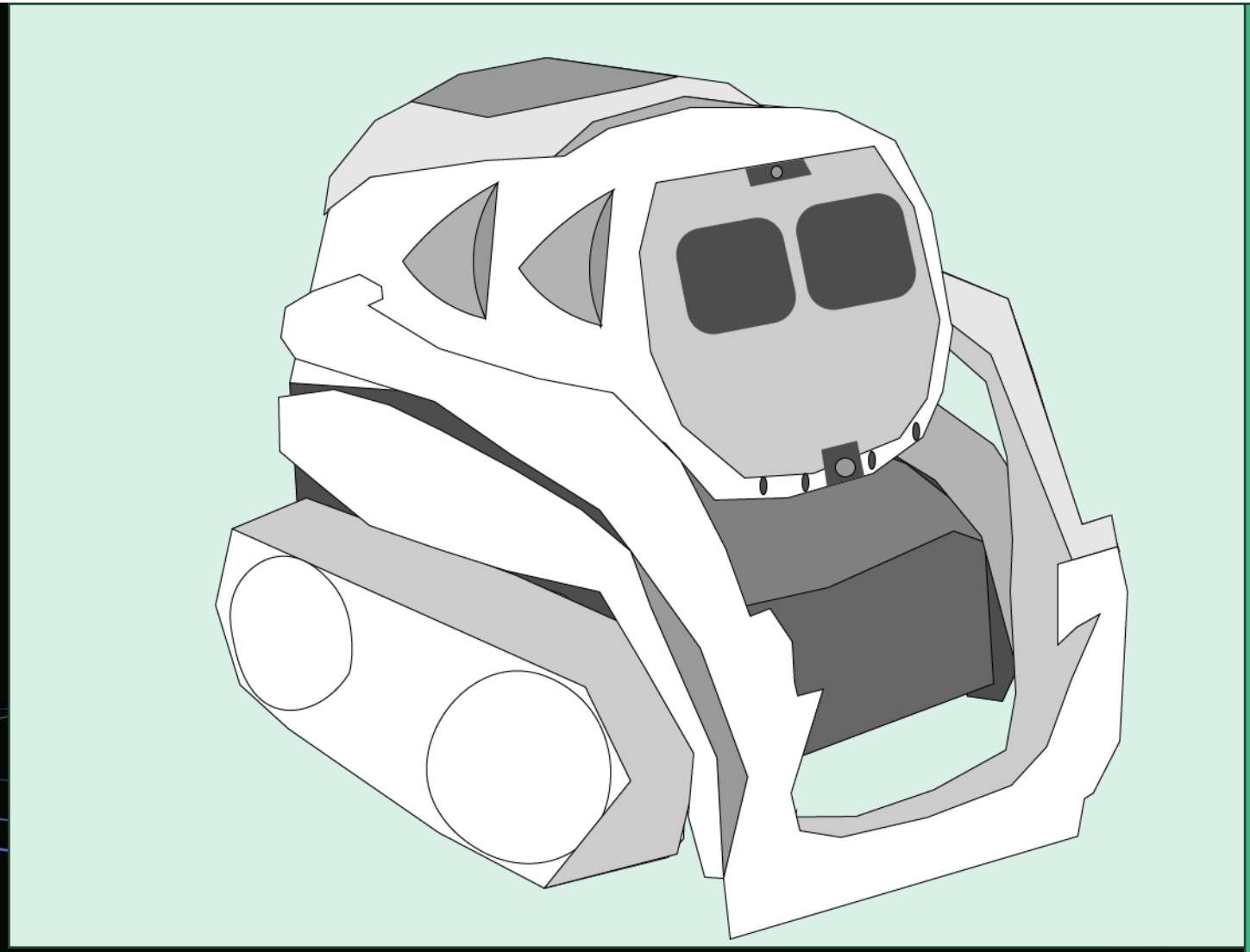
Additional Interaction
Building on the foundation of base interactions with new and intuitive ones, Including the inclusion of games.




# Design Process

1. Improved Hearing Module
2. Infra-red projector for addition interaction, like projected games
3. Improved camera for person recognition and picture taking
4. Improved speakers to allow different volume settings and quality music
5. Improved battery and faster charging
6. Hi – Def display for quality bot emotion
7. QR scan for connect
8. New App Logo
9. Addition settings for connection
10. Adding Accessibility, such as parental restriction.

# Design



The outer shell of the device was kept very similar due to the “Cute” and “Pet – like” aspect, which didn’t receive any criticism by both the usability testing, and the research conducted by (Tsiourti, Pillinger, Weiss. (2020)) Group.

# Future Improvements

With the significant rise on AI Market, many IT companies flock  to further research and develop AI, or (AGI) in its current form. Vector will benefit from future implications in research into AI. This being his general intelligence, ability to communicate on a much more emotional level, which could be further enhanced with additional expressions.

The Robot could also have a design change to incorporate more “Play”, and interact with a wide range of objects, opposed to its standard Cube.

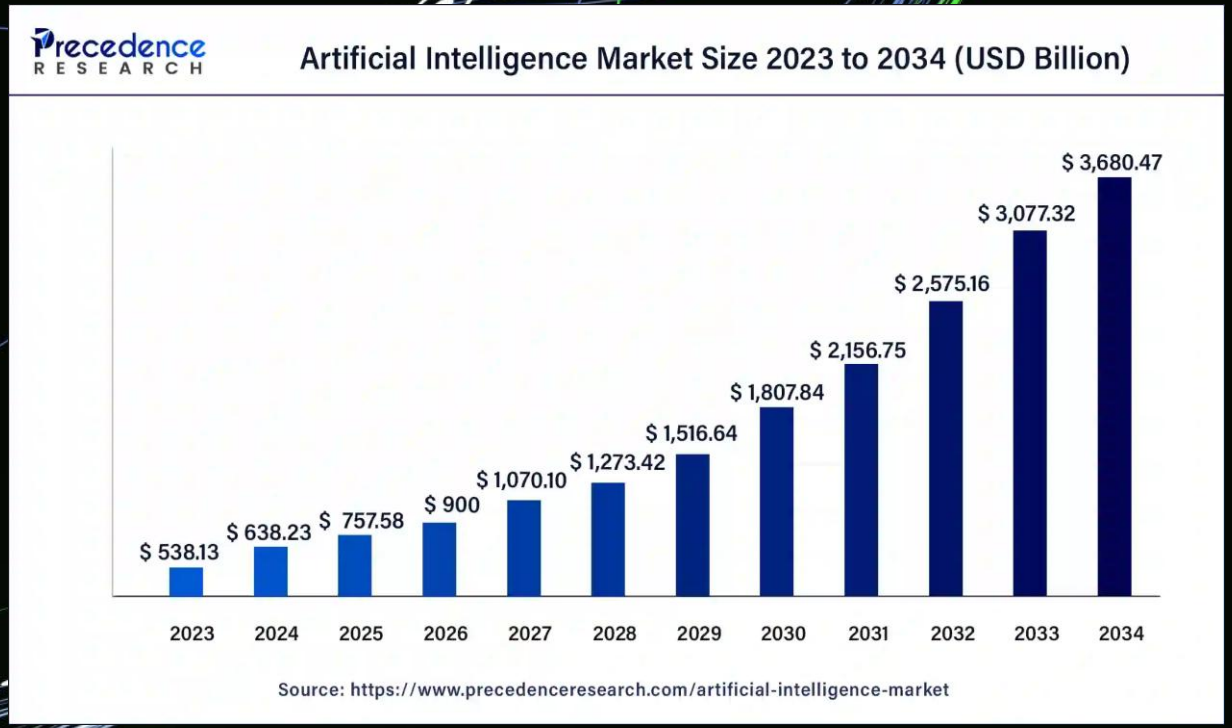



Figure 2: Growth on AI spending (Precedence Research(2024))

# SUMMARY

With the development of AI at an all-time high, Vector robot could have massive potential. If given some of the latest technology to improve its human interaction, vector could a useful day to day device with personality and character, giving it a unique twist on voice companion bots, while still offering all the services they include. With both the study conducted here and the one conducted during Covid 19 by a HCI group in Austria. **(Tsiourti, Pillinger, Weiss. (2020)).** The demands remain the same, potential but in its current form, after the novel factor many participants lost interest. The changes made to the device in this presentation would give vector a footing among AI companion bots in todays market,.

# References


1. Niranjanamurthy M1 , Archikam Nagaraj2 , Himaja Gattu3 , Puneeth K Shetty4 (2014) - Research Study on Importance of Usability Testing/ User Experience (UX) Testing - https://www.ijcsmc.com/
2. https://dl.acm.org/doi/10.1145/3406499.3418767 **(Tsiourti, Pillinger, Weiss. (2020) )**
3. https://www.statista.com/forecasts/1037364/regularly-used-functions-of-amazon-s-alexa-in-the-us **(Alexander Kunst (2019))**
4. https://www.precedenceresearch.com/artificial-intelligence-market **(Precedence Research(2024))**