1. EBITEN SAMURAI - “Cynapse”

CYNAPSE

1. Executive Summary / Mission

As fully automated Level 5 vehicles become widely used, the centralized networking system of our current internet, a.k.a. Web 2.0, will be insufficient to manage all the data collected.[1] Because data is stored in a centralized server, server overload or a single cyberattack can seize all control of vehicles connected to it. Therefore, we have designed a decentralized system that implements Web 3.0 technology in the systems of Level 5 vehicles. We want to achieve a society that implements a secure yet efficient transportation system through Level 5 vehicles. Through the capability of Cynapse’s cyberattack protection as well as its location data technology that drastically decreases AI inaccuracies, we will be able to increase the trust factor of Level 5 vehicles, allowing it to be better implemented into society.

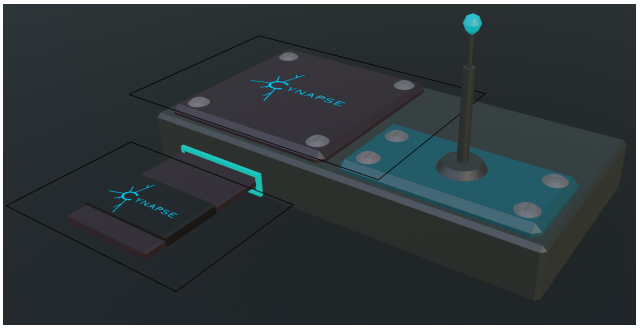
2. Product/Service Description

Cynapse is a system that prevents and minimizes the harm done by cyberattacks and AI errors. By connecting Level 5 vehicles to one another using Web 3.0 technology of decentralized networks and blockchain data collection, Cynapse ensures safety and security.

The decentralized network stores data on each individual computer instead of a centralized server, also encrypting it making it more secure. This distributed control minimizes the damage of a potential cyberattack as even if one Level 5 vehicle is hacked, the system or other Level 5 vehicles in the system will not be at risk. This makes the individual Level 5 vehicles, users of Cynapse as well as the public safer. Cynapse collects locations of surrounding vehicles using the decentralized network, preventing accidents due to cameras and sensors failing to detect other cars with other vehicles connected to the Cynapse. This has been an issue in current self-driving cars (Level 2) where the AI made miscalculations due to a lack of data resulting in fatal crashes. This therefore incentivizes more self-driving vehicles to install the Cynapse, minimizing traffic accidents due to AI inaccuracies.

To connect to the Cynapse, there will be a transmitter device implemented as an extension to the computer that is already a part of all Level 5 vehicles. These transmitters will then communicate data with other cars within a 100-meter radius, constantly updating their positional and movement speed information. This allows each individual computer to calculate the optimal speed and position the vehicle should be at before coming in contact with another vehicle on the Cynapse, making traveling both efficient and safe.

The Level 5 vehicles will continue using pre-existing sensory AI detection technology for non-self-driving cars and vehicles not connected to the Cynapse network. The transmitter device will be made out of antennas and a storage device that will communicate information, and the Cynapse system will require car manufacturers to pay a yearly subscription for the system. Newly manufactured cars will have this hardware pre-installed before sale, and companies will gradually implement this hardware to the older models at times like car inspections. The car manufacturers will have the incentive to do this, because it will make their entire car system security safer in terms of hacking and damage minimization. The more that they spend on this or the more per unit system that they buy from us, it will be safer for them.



3. Market Research

Consumer optimism regarding the implementation of Level 5 vehicles in Japan is considerable as 47% are willing to purchase. [2] This demand will stimulate car companies in Japan to increase their production of Level 5 vehicles, resulting in an increase in the firms in the Level 5 vehicles industry. Before Level 5 vehicles will develop, there is a major issue surrounding security for automated vehicles as the usage of the conventional centralized

system risks people's information being leaked once it is hacked, since all data is stored in a single database.[3] Cyberattacks have resulted in large tech companies having their databases hacked and private information being leaked.[4] Greater risk for databases controlling Level 5 vehicles is concerned, as cyber hacks could not only lead to information being leaked but possible deaths as a result of the vehicles being controlled.

4. Target Customer

Our target market is the Japanese manufacturers of Level 5 vehicles. The current centralized data causes AI on vehicles to malfunction, and manufacturers need an efficient decentralized data-collecting system. Newly introduced vehicles and their potential security threats and damage caused by them, are making manufacturers need a cyber security system that they can implement in the car that uses a decentralized network. Thus, as Cynapse solves potential security threats and damage caused by them, we will be unique in the market and manufacturers will have high demands for our system.

It is crucial that we, the third party, will be supplying this product, as we are not a threat to manufacturers, compared to when a similar technology is produced by other car manufacturers. This would result in the manufacturer being at an advantage, decreasing the incentive for companies to use the system. The efficiency of the system will be ensured when it is provided by a single company like ours, incentivizing companies to use our system.

5. Financials

In the first year, our product is targeted at the top three car companies in Japan. The units sold per company are calculated based on half the mean of the number of vehicles sold for the three companies. Start up cost includes 1 year software development cost. Expenses such as the rent cost are minimized by outsourcing the manufacture. We will require a funding of ¥200,000,000 and a loan, however, because of the yearly subscription plan, we will increasingly be earning profit from the second year, where we will be able to repay the loan and gain profit in the first three years.

JPN ¥ /yr			
Target Audience (Car companies in Japan)			36
Units Sold Per Company (Number of cars sold per company)			20000
Market Penetration Rate Per Year			8.33%
JPN ¥	yr 1	yr 2	yr 3
Units Sold	60000	120000	180000
Revenues	**¥2,100,000,000**	**¥5,400,000,000**	**¥9,900,000,000**
Price per product	¥15,000	¥15,000	¥15,000
Subscription Fee per product	¥20,000	¥20,000	¥20,000
Start Up Cost	**¥250,000,000**	**¥0**	**¥0**
Production Cost	**¥1,200,000,000**	**¥2,400,000,000**	**¥3,600,000,000**
Hardware Cost per unit	¥20,000	¥20,000	¥20,000
Expenses	**¥1,250,000,000**	**¥1,250,000,000**	**¥1,250,000,000**
Research & Development	¥1,000,000,000	¥1,000,000,000	¥1,000,000,000
Staff Salaries	¥250,000,000	¥250,000,000	¥250,000,000
Blockchain Engineers	¥210,000,000	¥210,000,000	¥210,000,000
Software Engineers	¥30,000,000	¥30,000,000	¥30,000,000
Manufacturing Engineers	¥10,000,000	¥10,000,000	¥10,000,000
Profit/loss before tax	**-¥600,000,000**	**¥1,750,000,000**	**¥5,050,000,000**
Income tax	**¥0**	**¥525,000,000**	**¥1,515,000,000**
Net profit	**-¥600,000,000**	**¥1,225,000,000**	**¥3,535,000,000**
Funding required	**¥200,000,000**	**¥0**	**¥0**
Loan required	**¥400,000,000**	**¥0**	**¥0**
Repayment of loan	**¥0**	**¥230,000,000**	**¥230,000,000**
Cash balance	**¥0**	**¥995,000,000**	**¥3,305,000,000**

6. Conclusion

As our product becomes prominent in our society over time, roughly 50% of the population in Tokyo will be willing to purchase Level 5 vehicles, with the percentage of ownership expected to increase, as the more normalized it becomes the more people will feel comfortable purchasing it. Later, Cynapse aims to extend and expand its market to international markets in the near future, where Cynapse can become a worldwide system that collects further Big data, while keeping its unique decentralized system. Not only will this protect the manufacturers' business from threats, but it will change how passengers and pedestrians feel about road safety and change the attitude towards Level 5 vehicles as a whole.

7. References

[1] "New survey reveals $2 trillion market opportunity for cybersecurity technology and service providers." McKinsey & Company, https://www.mckinsey.com

[2] "Demand Analysis of Automated Driving Vehicles in Japan." Research Institute of Economy, Trade and Industry, https://www.rieti.go.jp

[3] "Major Centralized Systems are Hacked Multiple Times a Year." AXEL, https://medium.com

[4] "Apology and Notice Concerning Leakage of Personal Information." Mazda, https://www.kitakanto-mazda.co.jp/news/20230214/index.html