

1. Strategy and Implementation Summary

In our Strategy and Implementation Summary, we outline our strategic goals, emphasizing the establishment of Gestura as a leading smart home control solution, supported by user-centric design and seamless integration. We detail our tactical plans, which include targeted marketing campaigns, strategic partnerships, and continuous product innovation to drive adoption and market expansion. Furthermore, we address risk management, identifying potential challenges such as technological hurdles, market competition, and supply chain disruptions, while proactively implementing mitigation strategies to safeguard our objectives and ensure long-term success.

1.1 Strategic Goals

There are three strategic goals for our company to succeed. Firstly, to establish Gestura as the premier choice for intuitive smart home control, focusing on user experience and seamless integration with existing devices. Secondly, to expand market reach by leveraging partnerships with leading smart home device manufacturers and retailers, aiming for widespread adoption among consumers. Thirdly, to continuously innovate and enhance Gestura's capabilities through research and development, ensuring it remains at the forefront of technology.

1.2 Tactical Plans

Tactical plans have been put in place to assist our company to succeed. To achieve our first goal of having Gestura being intuitive, a testing plan is created that asks for feedback from users testing the product. The results from the test are used to determine how easy the product is to use or generate ideas based on feedback to improve the product. The second goal is to expand the market by creating partnerships with leading smart home device manufacturers. Gestura must be able to connect with smart home devices and have the ability to send commands to them. Finally, research will be done to understand what our customers want and how we can improve or simplify homes using smart home devices and automating their home.

When the product is released to confirm that our product is worth it for our customers, we plan to implement a tactical plan for testing. The plan to expand the market and being an innovative company is implemented after our product is released. Resources such as staff will be used to test the product and get feedback from users and research into how the product can be improved or accessed to collaborate with smart home device manufacturers.

1.3 Risk Management

A risk that may be faced is customers not giving feedback on our products. Another risk is there is a shortage of smart home devices from a specific company. To mitigate these risks, a plan has been developed. Offering incentives to customers for their feedback would decrease the chance of this risk occurring. The incentive can be as simple as a coupon to save \$20 - \$50 on smart home devices or any other product made by our company. As for the risk of a company having a shortage of their products, we plan to build Gestura so that it can be compatible with other smart home device manufacturers' products. The product would not be beneficial if the customer was unable to purchase smart home devices.

2. Management Summary

In our management summary, we present the composition of our team, highlighting expertise in technology development. We explain our market fit, illustrating how Gestura meets the increasing demand for intuitive smart home solutions. Lastly, we discuss our position within the development stage, outlining our progress in product refinement and market outreach.

2.1 Team Composition

The team has 5 members, and each plays a vital role in making production run correctly and smoothly. Roy Whinton is the team lead and user interface lead. As team lead Roy ensures all subsystems are working as intended. The user interface leads oversee making sure the product is easy to use and user friendly. John Box, data communications lead and 3D modeling support ensure off communication between devices runs smoothly. Shenna Booker, user feedback lead works with making sure the customer receives accurate feedback from the device. Brit Miranda, 3D modeling lead designs all the 3D modeling for the product. Eric Duncan, gesture recognition lead is primary over the database and coding for the product. Each role has a support role as well. All the team members' roles are based on strengths. The balance of all these strengths is what makes the entire process run smoothly.

2.2 Market Fit

The target market for Gestura is primarily young homeowners. The product effectively addresses the need for seamless control over home devices without physical interfaces or voice commands, catering to individuals seeking an intuitive, hands-free approach to managing their smart homes. Market research indicates a growing demand for such solutions based off individuals with

disabilities where voice commands are not ideal. Gestura will use gestures over voice commands to control home devices.

2.3 Development Stage

The current state of our product is a prototype. We plan to do more research and development with more funding. Currently there are no limitations for our abilities as a team, but we may have to do more research on the business side of it to secure building locations, advertisement, and business strategies.

3. Financial Plan

In our financial plan, we outline our revenue projections, detailing expected income streams from the sale of our innovative product, Gestura. Additionally, we delve into our cost structure, examining expenses such as production, marketing, and overheads to ensure financial viability during our development stage.

3.1 Revenue Projections (Roy Whitenton)

In the first year, we project selling 1000 units with a sale price of \$300 and assembly time of 2 hours per unit. The cost of parts for a unit is \$200 and the cost of labor per unit is \$20. We are expecting to lower manufacturing prices by at least \$50 within the first 3 months of production, which puts the first 50 units at \$220 and the other 950 units at \$170. Total lease for the year will be \$15,000, and electric and water will cost \$2,500 per year. We also expect to pay \$10,000 per year for advertising. The total cost will be \$152,500 for the parts, \$20,000 for the labor, \$10,000 for advertising, and \$17,500 for the office bringing the total to \$200,000. The total revenue will be \$300,000 leaving a profit of \$100,000. We will increase advertising costs to \$20,000 for the next year, and we expect to sell between 5,000 to 10,000 units. Our profits will be between \$612,500 and \$1,262,500.

3.2 Cost Structure (Eric Duncan)

There are several factors that are crucial to sustaining operations and producing a profit for the company. First, production costs include parts acquisition and manufacturing expenses for producing Gestura devices. The ongoing server maintenance costs that are necessary to process gestures efficiently, which will ensure convenient use of Gestura. Marketing costs are allocated towards Gestura and expanding the reach of our target market through targeted advertising campaigns and strategic partnerships. Additionally, rental costs for office spaces and facilities contribute to overhead expenses. To minimize costs, we will conduct analysis on the minimum

performance needed for the servers for our product to still be effective to ensure we do not overspend on server maintenance. Another potential method is to downsize our offices to save on overhead costs. One other plan is to analyze where we can use cheaper parts to lower the manufacturing costs per unit.

Here is a break-even analysis for our business:

First, our expenses are listed in **Table 1**.

Table 1: Expenses for Gesture-Link Home Solutions

Expenses	Price
Server Costs	\$250/month
Marketing Costs	\$1,000/month
Overhead Costs	\$1,500/month
Total	\$2750/month

With the manufacturing costs of our product being \$200 per unit and the sale price of our product being \$300 per unit, this leads to \$100 profit per unit. Therefore, the break-even point would be

$$\frac{2,750}{100} = 27.5$$

Which means we would need to sell 28 products per month to break even.

3.3 Development Stage (Eric Duncan)

During the development stage, Gesture-Link Home Solutions identifies key capital needs to support various aspects of its business. Initially, the company requires capital for research and development to refine Gestura's technology and user interface, as well as for prototyping and testing. Additionally, funds are needed for marketing efforts to build brand awareness and generate early customer interest. To address these capital needs, Gesture-Link Home Solutions explores multiple funding sources. Initially, the company may rely on founder investments and seed funding from angel investors or venture capital firms specializing in technology startups. As product development progresses and market traction increases, the company may consider additional rounds of funding, such as Series A funding, to scale operations and expand market reach. Moreover, loans from financial institutions could be sought to supplement equity financing and provide working capital.

To achieve financial sustainability in the long term, Gesture-Link Home Solutions implements a comprehensive plan. This plan includes:

- **Revenue Generation:** The company focuses on driving sales of Gestura devices and related services to generate steady revenue streams. This involves strategic pricing, distribution channel optimization, and customer acquisition efforts.
- **Cost Management:** Gesture-Link Home Solutions prioritizes cost efficiency across all aspects of its operations, including production, marketing, and overhead expenses. By implementing lean processes and leveraging economies of scale, the company aims to optimize cost structures and improve profitability.
- **Diversification:** To mitigate risks associated with relying solely on hardware sales, the company explores opportunities for diversification. This may involve offering subscription-based services, developing complementary products, or entering new market segments.
- **Partnerships and Alliances:** Gesture-Link Home Solutions seeks strategic partnerships and alliances with key industry players, including smart home device manufacturers, technology platforms, and retailers. These collaborations can provide access to new markets, distribution channels, and resources, enhancing the company's competitiveness and revenue potential.

By carefully managing capital needs, leveraging diverse funding sources, and implementing a plan for financial sustainability, Gesture-Link Home Solutions aims to establish a solid foundation for future growth in the smart home market.

4. Executive Summary

The smart home market is growing, offering users a more convenient way of managing their surroundings. Gestura offers a new style of smart home system controlled by gestures, unlike the competition that relies on voice commands. This change offers a smart home to a wider range of users and does not require extra devices to set up or control the smart home. Gestura is an all-in-one tablet system that monitors gestures through cameras placed throughout a user's home. **Figure 1** presents an overview of the project.



Figure 1: Gestura Diagram

To meet its goals, the project requires that Gestura detect gestures within 10 feet accurately, is easy to set up, is compatible with most smart home devices, has a long-lasting battery life, and prevents unintentional inputs to the device. The constraints include a fully working prototype within two semesters and a \$1000 budget.

For the hardware, the design team started the project using a Raspberry Pi as the focal point. The system runs through the Pi as a head unit communicating via Wi-Fi. Wi-Fi allows the device to send wireless commands to smart home products, such as lights and plug-ins. The team then chose an 8-megapixel camera for gesture tracking. The gesture recognition algorithm was coded in Python using the OpenCV library and Mediapipe for hand tracking. The 3D enclosure is designed with ABS (Acrylonitrile Butadiene Styrene) plastic to ensure durability in household environments. Gestura operates by looking for a start gesture, which is a gesture that will initialize its smart home control capability, much like how “Hey Siri” kickstarts voice recognition. Then, once Gestura takes input from the five available static gestures, it sends a user-defined command, such as turn on and turn off, to the smart home device.

The design team plans to make the camera wireless, have a more responsive/interactive interface, and implement user-programmable gestures. With all these changes, this product is perfect for both home users of smart home devices and businesses seeking additional accessibility options.