Section 6

Team 2

Fall 2023

Watchhawksecurities.com

Business Plan

Business Name: Watch Hawk

Business Idea: Surveillance Drone

Team Members:

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Executive Summary

Watch Hawk
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Management:
Chief Executive Officer
Director of Finance
Director of Operations
Director of Sales and Marketing
Production Manager
Quality Control Manager
Sales Manager

Industry: Security Technology

Number of Employees: 32

Amount of Financing Sought: $45,041,605
Shareholder Equity: 93%
Bank Loans: 7%

Investment Sources:
Shareholders
Bank Loans

Use of Funds:
Research & Development
Factory
Raw Materials
Advertising

Product selling price: $6,775.85

Business Description: Watch Hawk is a California based security provision company with a specialization in innovative technology. We manufacture, develop, and distribute our flag-ship product, the Watch Hawk Drone. As a techonology development company, we plan on investing heavily in research and development. That goes for our existing as well as new products. That we can continuously deliver quality secuirty products that our competition cannot keep up with.

Products/Services: Watch Hawk is an autonomous security drone designed to detect intruders and stop them as well. The drone flies autonomously, thanks to its software and camera system, which allows it to detect and fly around objects. It is manufactured in the United States, while most components are sourced from distributors in China. In year one we expect 3,400-unit sales, while having a cost of $3387.93 per unit, we are selling it at $6775.85, which represents a standard markup of 50%.

Competitive Advantage:
There is a multitude of drone companies as well as security companies, but none offer a comparable product. We plan on providing a mode of security that has the awareness of high-tech camera systems and even better mobility than a security guard. Our proprietary software will take a significant amount of time and money to try to replicate.

Markets: Our main target markets revolve around warehouses, farms, retail stores, and shipyards. Our customers would use this to detect and get rid of animals that may get in and could use the zapping feature to prevent animals from reaching the food. The agricultural segment has a market size of approximately 68,400 farms with a revenue growth rate of 8.8% per year. There are around 34,000 warehouses we could work with a 6.32% job growth in a ten-year projection. Dry shipping and shipyards have about 570 dry shipping vessels in California and a 2% job growth in the next 20 years. Lastly, there are 500,000 retail stores in California which have a 2% job decline in the next 10 years. Our revenue model is based on markup, since we are increasing our price depending on the costs.

Distribution Channels: We will be using a direct sales force. The go-to-market plan will include radio, television, and social media marketing. The sales reps and marketing team will attend industry events as well as cold-calling and email campaigns to schedule face-to-face demonstrations of the product.

Competition: Competition we may be facing would be other drone companies, security camera companies, or the use of human security guards. There is no direct competition since the drone companies and security camera companies have not combined like we have. Since we have a mix of camera footage, drone use, and the zapper, we have a higher value product as well as a new form of security for businesses to use. We also would be taking the place of human security guards since it is safer and more reliable.

Financial Projections in thousands (Unaudited):

	2024	2025	2026	2027	2028
Revenue:	$23,037.90	$32,285.87	$125,778.08	$152,827.22	$177,587.41
EBIT:	($12,058.8)	($7,700.9)	$8,348.4	$17,125.4	$17,705.2

Narrative

Elevator Pitch

Our security drone uses advanced AI and state-of-the-art sensors. It autonomously patrols your facility, providing real-time, 360-degree surveillance. Our drone is designed to revolutionize monitoring and security for farms, warehouses, and retail businesses. It detects anomalies, such as unauthorized access and unwanted vermin and instantly alerts your team. This cost-effective solution enhances safety and reduces product loss costs. Elevate your security with Watch Hawk, the security that never blinks.

Product/Service Description

Our product is an aerial surveillance drone, equipped with cameras, sensors, and proprietary software that allows it to function autonomously, and remotely given the circumstances. The drone will take inventory of the location to the customer's specifications as well as monitor for intruders or vermin that could affect merchandise. Once threat/vermin are found (rats, coyotes, intruders, etc.), the drone will be capable of zapping threats on its own, should the owner have that setting enabled. Many warehouses and other large commercial spaces still rely on humans to monitor for such issues. There are a few problems with this approach: it is costly to have workers on premises 24/7, workers can become fatigued during long hours of work and can lose awareness, and it can be dangerous for personnel to have to deal with intruders/vermin on their own.

Competitive Advantage

Our biggest asset to the marketplace is our proprietary software which is difficult to imitate and adds to our product differentiation. It would also be difficult for existing or potential competitors to intervene in our target market since we are the first security drones in the marketplace and would already have existing relationships by the time they launch a product. The different aspects we have in our drone make us very competitive in the marketplace compared to other types of security available already.

Value Proposition

We offer a unique product which utilizes cutting edge technology, ensuring that we provide extensive value, capturing and maintaining control of a large market share. Our continued investment into our Research and Development Team will make sure that we are actively improving our product to keep emerging in the market of autonomous drones, while

experiencing exponential growth. At this time our only source of revenue is the sale of the drones. However, down the line we may open up different revenue streams through

Business Strategy

Watch Hawk plans on building the business around a growth strategy. Meaning, we will spend heavily in research and development in order to grow our market share. We plan to market and deliver product demonstrations directly to prospective customers, which will serve as a proof of product and word-of-mouth advertising.

Business Location

We are basing our business in California. This makes sense since we are outsourcing our materials and plan to get them shipped by boat, making California easily accessible. The state is also key to our market as the industries we are selling to are critical in this state. There are over 110,000 farms and warehouses in California making it a steady location for business. California is also rated number 1 in terms of technology and access to capital for businesses (Business Finance Capital).

Outsourced Functions

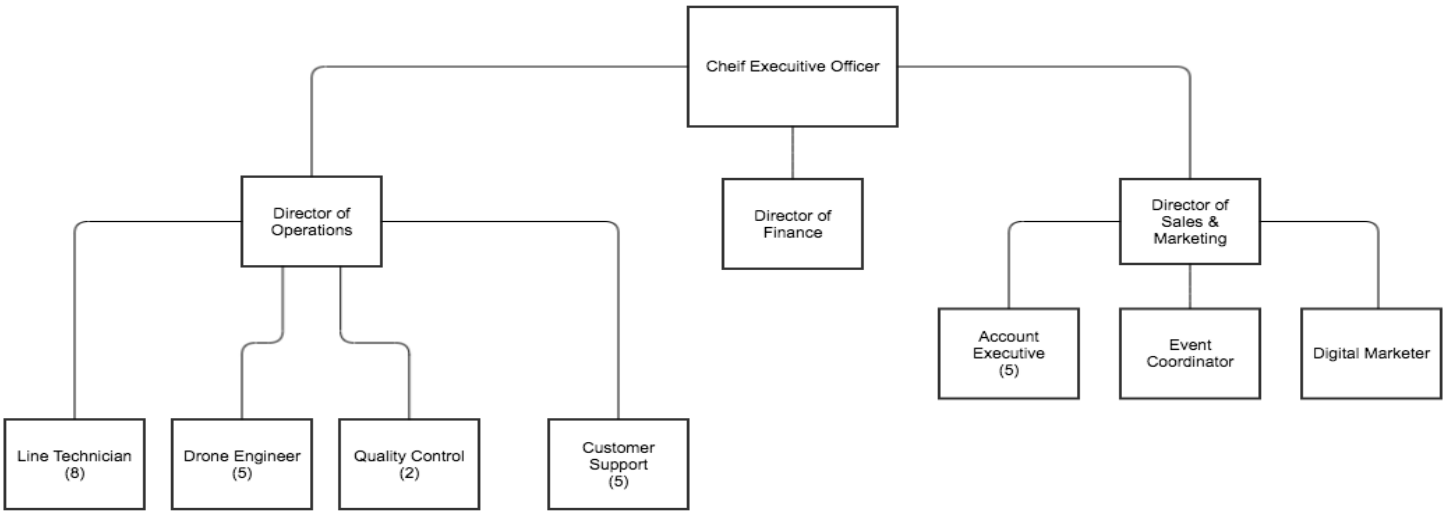
The software would be outsourced to a software company. It is important that this aspect be outsourced since it requires a high degree of specificity. The cost of hiring and retaining a team of technical employees would outweigh the cost of contracting a company.

Financial Performance

In our first year, Watch Hawk is projected to have $23,037,897 in revenue, while operating at a net loss of $12,732,894. By Year 5, we expect to bring in $177,587,410 in revenue with a net gain of $13,987,142. Over the five years, our return on equity is around 0.25-0.3 after year two, with a gross profit margin of around 0.5. This shows how we are expected to make a consistent profit after year two, as well as the profitability of our plan as a whole.

Exhibit 1: Organizational Chart

Watch Hawk Organizational Chart: January 2, 2025



Our organization is based on a functional design. We have directors for each main department and managers who lead teams of a mix of salaried and hourly workers. In years 1 and 2, we will maintain a smaller workforce for sales and production. Starting in Year 3, we plan on increasing hiring to keep up with increasing volume of sales. We plan on recruiting through our industry partners, LinkedIn, as well as recruiters. The recruiting process will begin around 3 months before we begin work, leaving time for finding workers, interviewing, and finally hiring them.

Business Timeline

Day -21	Apply for federal EID number, and business license
Day -10	Set up bank account, and deposit funding
Day -5	Contact recruiters
Day 0	Find factory location
Day 1	Begin hiring
Day 2	Rent out factory and purchase equipment
Day 3	Make facility improvements
Day 17	Build production line
Day 50	Get supervisors and management on board
Day 100	Begin marketing promotion
Day 105	Hire employees
Day 111	Begin training employees
Day 130	Start business production
Day 150	Deliver first product/service

Secured People and Training:

We plan on finding employees by contracting recruiters. To ensure we find employees with the correct skill set to develop the drones from a technical perspective, we must consult with our software developer to identify critical skills. For our management positions, it will be important that they locate management and training skills, since they will be responsible for integrating employees, until employees in staff positions are comfortable enough to train new hires.

Critical Employees:

Our critical employees are made up by our line technicians, drone engineers, customer service representatives, and quality controllers. They all contribute directly to our operations as a business. While quality control and customer service do not contribute directly to revenue, we would quickly lose all of our business without them.

Exhibit 2: Pay and Benefits

Compensation							Mandatory Payroll Deductions				Benefits					
Position (Salary/Wage - W) (Full-time Assumed, Part-time - PT %)	Salary or Wage for position)	Bonus or Commission	# for position	Projected End of Year 2 Salary or Wage **including** bonus/comm. Each	Projected End of Year 2 Salary or Wage **including** bonus/comm . all positions	FICA	FUTA*	SUTA	WC	Mandatory Deductions - Total	Benefits - Health Cost	Benefits - Retirement Cost	Any other Benefit Cost- List line 17	Benefits - Total	Total Cost per Employee	Total Cost for All Employees
Chief Executive Officer (CEO)	$ 152,500.00	0	1	159363	152500	23333	420	270	3050	27072	7196	10000	0	17,196	203,631	**203,631**
Director of Finance	$ 93,525.00	0	1	97734	93525	14309	420	270	1871	16869	7196	9370.5	0	16,567	131,170	**131,170**
Director of Operations	$ 82,750.00	0	1	86474	82750	12661	420	270	1655	15005	7196	7450	0	14,646	116,125	**116,125**
Director of Sales & Marketing	$ 87,500.00	0	1	91438	87500	13388	420	270	1750	15827	7196	7414.5	0	14,611	121,875	**121,875**
Quality Control	$ 71,100.00	0	2	74300	142200	21757	420	270	2844	50580	7196	6884.5	0	28,161	110,471	**220,941**
Sales Manager	$ 125,000.00	0	1	130625	125000	19125	420	270	2500	22315	7196	6250	0	13,446	166,386	**166,386**
Production Manager	$ 76,190.00	0	1	79619	76190	11657	420	270	1524	13870	7196	3809.5	0	11,006	104,495	**104,495**
Event Coordinator	$ 65,470.00	0	1	68416	65470	10017	420	270	1309	12016	7196	3274	0	10,470	90,902	**90,902**
Digital Marketer	$ 69,500.00	0	1	72628	69500	10634	420	270	1390	12713	7196	3128.8	0	10,325	95,665	**95,665**
Customer Support	$ 62,250.00	0	5	65051	311250	47621	420	270	6225	272679	7196	2366.5	0	47,813	126,348	**631,742**
Drone Engineer	$ 122,000.00	0	5	127490	610000	93330	420	270	12200	531098	7196	6100	0	66,481	241,516	**1,207,578**
Line Technician	$ 61,500.00	0	8	64268	492000	75276	420	270	9840	686444	7196	2337.5	0	76,269	156,839	**1,254,713**
Account Executive	$ 35,000.00	102000	5	138575	685000	104805	420	270	13700	595973	7196	6850	0	70,231	270,241	**1,351,203**
Totals	**$ 1,104,285.00**	**102000**	**33**	**1255978**	**2,992,885**	**457,911**	**5,460**	**3,504**	**59,858**	**2,272,460**	**93,549**	**75,235**	**0**	**397,220**	**1,935,662**	**5,696,425**

Standard Time-off Benefits

*Bonuses: Position/s: x% , all other employees= x%. Commissions: All sales employees= x% per employee

Holidays (list all): Federal holidays

Other Benefits: (include cost and descriptions for each): N/A

Mandatory Payroll Deductions			$ Caps or Limits			**Benefits**	Enter Total Cost Per Employee per Month	Enter % Paid by Co.	Total Paid by Co.	Enter Annual Deductible	Enter Co-Pay per medical visit for Primary/ Specialist
FICA	15.30%										
FUTA	6.00%		$7,000		*Research how to pay 10% of FUTA	Health Insurance	708	84.7	$600	1000	25
SUTA	3.9%		$7,000				Vacation (in Days)	Sick Leave (in Days)			
WC	2%					Time off	15	5			

Positions Added by Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total Employees
Chief Executive Officer (CEO)	1	0	0	0	0	1
Director of Finance	1	0	0	0	0	1
Director of Operations	1	0	0	0	0	1
Director of Sales & Marketing	1	0	0	0	0	1
Quality Control	2	0	0	0	0	2
Sales	1	0	0	0	0	1
Event	1	0	0	0	0	1
Digital	1	0	0	0	0	1
Customer	5	0	0	0	0	5
Engineer	5	0	0	0	0	5
Technician	8	0	10	0	0	18
Executive	5	0	5	0	0	10
	32	0	15	0	0	47

Salary or Wage	Enter Percent matching	Enter $ cap or limit	Retirement Costs
275000	5%	10000	10000
187410	5%	10000	9371
149000	5%	10000	7450
148290	5%	10000	7415
137690	5%	10000	6885
125000	5%	10000	6250
76190	5%	10000	3810
65470	5%	10000	3274
62575	5%	10000	3129
47330	5%	10000	2367
122000	5%	10000	6100
46750	5%	10000	2338
137000	5%	10000	6850

Exhibit 3: Market Segmentation Analysis/Target Market Selection

Exhibit #3: Market Segmentation and Targeting - California

Segment Name	Size (# of People or Households in Segment)	Growth Projection	Description	Priority level for targeting
Agriculture	Approximately 68,400 farms	Revenue growth of 8.8% y/oy in Cali farms (21-22)	Includes companies in California that raise livestock, grow produce, or other farm product, outdoors. We can reach this segment with our in person sales as well as the two trade shows we plan to attend each year. We will also be advertising on LinkedIn.	2
Warehousing	Approximately 34k warehouses	6.32% job growth 10 year projection	Includes companies in California that store large amounts of valuable inventory and/or perishable goods. We can reach this segment with our in person sales as well as the two trade shows we plan to attend each year. We will also be advertising on LinkedIn.	1
Dry Shipping / Shipyards	Approximately 570 dry shipping vessels	2% job growth projected in the next 20 years	Companies dealing with dry and liquid bulk shipping. Large and valuable containers/inventory items. We can reach this segment with our in person sales as well as the two trade shows we plan to attend each year. We will also be advertising on LinkedIn.	3
Retail Stores	500k retail stores	2% decline in job growth projected over the next 10 years	Large retail stores with high value products. Inventory needs to be assessed and protected to minimize losses. We can reach this segment with our in person sales as well as the two trade shows we plan to attend each year. We will also be advertising on LinkedIn.	4

Exhibit 4: Market Quantification

Marketing Quantification

Year	Total Market Potential (No. of Customers)*	Market Share**	Annual purchase frequency***	Annual Unit Sales	Wholesale Price†	Retail Price†	Annual $ Revenue
2024	34,000	5%	2	3,400	0	$6,775.85	$23,037,896.54
2025	34,204	7.50%	2	5,131	0	$6,292.81	$32,285,870.80
2026	102,536	10%	2	20,507	0	$6,133.37	$125,778,077.20
2027	102,606	12.50%	2	25,652	0	$5,957.82	$152,827,217.75
2028	102,678	15%	2	30,803	0	$5,765.20	$177,587,410.17

* Indicate source and/or assumptions used to calculate total market potential https://scag.ca.gov/post/industrial-warehousing-study We assumed that each individual warehouse or farm would purchase drones independently of the entire company, for instance, a company could have multiple warehouses, and we assume that each warehouse will purchase 6 drones (the average of our survey responses). We included only California when developing our total market potential projections.

**** Indicate source and/or assumptions used to identify the market share AxTxAxR =?:** Based on our survey, it concluded that there was no difference in the preferred purchasing channel. We decided to sell directly to customers, through salespeople, instead of online because of the commitment involved (price, setup, maintenance, etc.). We will still have a website, but it will be mostly informational & used to book demos. We also assumed that trial and action would be based on survey responses, and each year we would add 2.5% since that would accumulate to our ending market share. We will add the 2.5% until we reached our max market share, starting from our calculated low, moving to our high. The 2.5% comes from our 15%-5% and divided that by 4 years because in Year 1 we are assuming we start with 5% so we will not add that into our growth rate market share.

***** Indicate source and/or assumptions used to identify the annual purchase frequency:** We assumed that the product would last on average three years and based on our survey results, the customer would on average purchase 6 drones & that each customer would repurchase after the drone needs to be replaced.

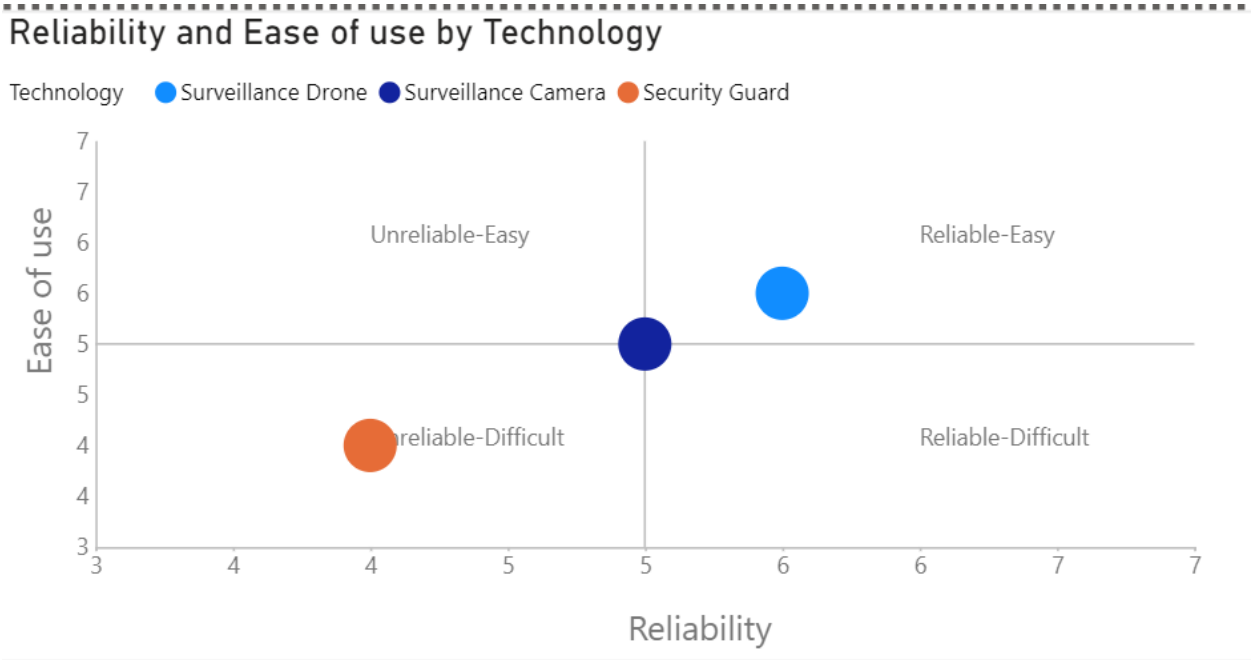
† Justify your price point and indicate your assumptions as to what % of your revenues come from wholesale and what % come from retail sales: Since our average purchase was 6 drones, we decided not to wholesale. The price of a unit will be roughly $5k, making wholesale unfeasible for most companies, along with the fact that there doesn't seem to be enough demand per-customer that would justify selling wholesale. Our price was determined by our total variable manufacturing costs as well as our break-even point per year. We also increased the cost of our product each year to adjust for inflation.

Breakeven Analysis

Year	Average Price	Total Fixed Costs	Unit Variable Cost	BEP in Units
2024	$6,775.85	$3,751,522.70	$3,387.93	1107
2025	$6,292.81	$3,882,826.00	$3,429.83	1388
2026	$6,133.37	$4,018,724.91	$3,549.88	1591
2027	$5,957.82	$4,159,380.28	$3,674.12	1862
2028	$5,765.20	$4,304,958.59	$3,802.72	2240

Explain any assumptions used in your breakeven analysis: Our infrastructure and manufacturing prices will only be impacted by inflation. Since we are using our own machinery and line workers, higher volume will not necessarily mean lower cost per hour. For example, our frames would still take the same amount of machine time and human capital to produce. To that same effect, since our business produces a relatively low volume of product, we assume there would be no impact from economies of scale on our outsourced parts, like batteries. Lastly, we assume that our business will steadily gain market share as the model dictates.

Exhibit 5: Positioning/Competitive Analysis



Positioning Statement:

Future innovations include adding a way for the drones to count inventory by scanning barcodes to keep track of any additional or missing inventory in warehouses. Current offerings in the security industry do not allow room for a reliable, but workforce light security option. By providing a security drone we fill that hole in the market by replacing human security guards and security cameras with a trustworthy around the clock security drone.

Exhibit 6: Marketing Mix

Marketing Mix

Product/Service Branding

Our slogan is "security that never blinks" which shows how we are basically taking the place of human securities since the drones will be safer and more dependable. Our logo entails a lock within a drone to show how the drone puts wherever it is, in "lock down" since it is used for securing different places. Lastly, our brand name Watch Hawk shows our purpose of the drones, while also comparing the value of our product to a hawk. Overall, our logo, slogan, and brand name all connect into showing the great value of our drones, while showing the purpose of replacing human security.

Pricing

	2024	2025	2026	2027	2028
Unit Variable Cost:	$3,388	$3,430	$3,550	$3,674	$3,803
Retail Price:	$6,776	$6,293	$6,133	$5,958	$5,765

Justify the choice of your price point: We chose these price points based off of our competitors, our unit variable cost is high because of the quality of our product. Our price was determined by our total variable manufacturing costs as well as our break-even point per year. We also increased the cost of our product each year to adjust for inflation.

Distribution/Location Strategy

Product Teams: Distribution strategy: We would use the United States Postal service to distribute the drone because it is a lower cost than competition and has the ability to ship anywhere in California.
Service Teams: We have both in-person service technicians and phone/online customer service. These are both for if a drone malfunctions or breaks and the customer needs help to get it fixed or troubleshoot the issue.

Promotional Strategy

	2024	2025	2026	2027	2028
Total IMC Budget:	$513,919	$513,919	$685,226	$685,226	$685,226
Campaign #1 (Trade Shows)	$48,000	$48,000	$48,000	$48,000	$48,000
Campaign #2 (Social Media)	$198,019	$198,019	$270,826	$270,826	$270,826
Campaign #3 (Advertisements)	$267,900	$267,900	$366,400	$366,400	$366,400

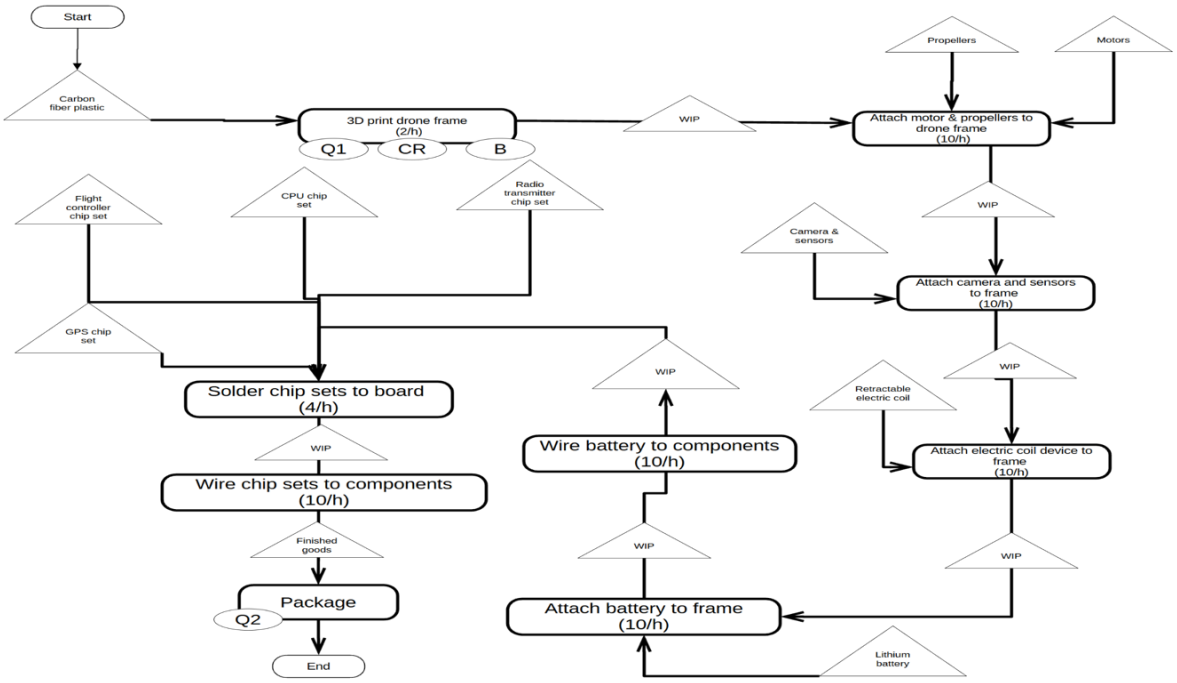
Describe specific promotional campaigns through which you will use your budget to communicate with your target market: We are using radio, television, Facebook, LinkedIn as well as in person trade shows to get in touch with specific companies in our target market.

No. of Salespeople:	5	5	10	10	10

Compensation Method: $35,000 salary + $300 commission per unit sold

Describe your professional sales management plan: After seeing our advertisements, companies can make an appointment with us so that we can show them the drones and demonstrate how they work. We will also demonstrate the product at events to increase interest and generate leads. Cold calls and targeted email campaigns will generate leads and opportunities for sales reps. Each rep will have targeted accounts within the state and will have a quota based on these accounts. All salespeople will report to the Director of Sales and Marketing.

Exhibit 7: Flow Chart



Critical Resource	Brief Description	Unit Cost (in appropriate unit)	How many?
Frame	Lightweight carbon fiber frame & body.	$400/unit	1
Motor, Propeller	1000w DC motor & carbon fiber propeller	$60/unit	4
Battery pack	10,000 mAH 22v lipo battery	$80/unit	2
Chipset	Flight controller chipset, Computer chipset, GPS chipset, radio transmitter chipset.	$300/system	1
Camera, Sensor, Lights	Night vision drone camera with high powered light, audio recorder & speaker	$750/unit	1
Stunning device	Electric stun gun, shoots retractable electric coil	$1,200/unit	1
3D printer	3D printer responsible for making our drone's frames		10
Soldering machine	Machine for attaching electrical components		5
Line technician	Our line technician employees construct the drone	-	18
Quality control	Our quality control employees test the devices and components	-	2

The facility will hold five 3D printing machines and two soldering machines for the first two years. During the third year, we will need an additional 3D printing machine & soldering machine. There will also be one conveyor belt system to move the parts to the next station. Each station will perform a step and then the WIP is moved to the next station.

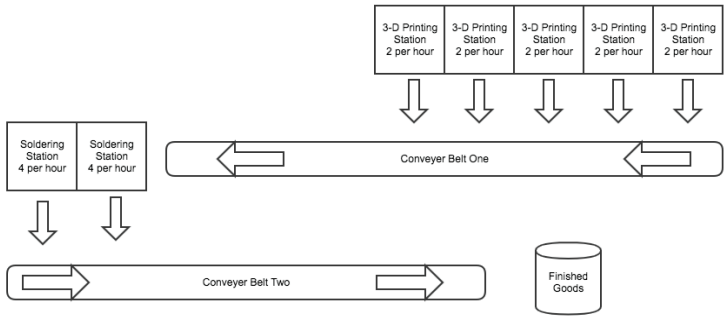


Exhibit 8: Quality

Indicate the Dimensions of Quality on which you will focus.	Why is this dimension important, given your industry & target market?	Identify the Quality Step(s) on the Process Flowchart / Service Blueprint to which this corresponds.
Durability	Durability is a critical quality of our drone. In case of any accidents, major or minor, our customers will expect durability, given the price they are paying. Importantly, the drone's exterior will need to hold up to potentially hazardous outdoor elements for years well enough to support it's internal components.	Q1
Reliability	Reliability is a key aspect of security devices since they are useless if they are not reliable. By enforcing a highly stringent quality control in this aspect we will not only have a better product, but be able to market it easier, since we will not have as many bad reviews.	Q2

Quality Step	What is measured?	How often?	How will you ensure quality?
Q1	Durability	Once	Stress testing at a level above normal expectations. (Stress test will be of force application equal to a weight of 150 lbs)
Q2	Reliability	Once	Performing test flights. By having the drones run through obstacle courses and fly for extended periods of time our technicians should be able to observe any mechanical defects in flight system.

Use the space below to describe any additional Proactive Quality Assurance Plans that are not connected to a specific activity on your Process Flowchart / Service Blueprint.

As we receive the raw material components, we will check them for defects & ensure they work before moving to production. This is important because it catches defects before production. We will also perform machine maintenance bi-weekly. In addition to that, our employees across the operations department will be trained to recognize and document defects.

Describe any reactive quality assurance plans. Include a recovery plan should a customer receive poor quality goods and/or services.

We offer a guarantee of the drone working under its warranty period, where if it does fail under normal conditions, we would replace it at no cost to the customer. That recovery plan would include a meeting with our quality assurance manager to understand the circumstances and mend customer relations.

If you will utilize a quality/process improvement methodology, indicate which:

☐ NA ☐ TQM ☐ Six Sigma ☐ ISO ■ Benchmarking

☐ Other (specify what): _____

Note: You will not use all of them; only those with highest relevance.

Provide a specific explanation of how your chosen quality methodology relates to your business and how it will be applied:

Benchmarking will allow us to continuously improve our product design by gathering data from our own production process and comparing it to our competitors process to help improve our design. It also allows us to incorporate feedback from our customers and not fall behind our competition. We based our benchmarks for durability and reliability on drone manufacturer DJI.

Exhibit 9: Inventory, Suppliers & Distribution

Item(s)	Supplier Name & Location (City, State, Country)	Reason for selecting this supplier	Supplier lead time (in days)	Frequency of replenishment (in days)	System of Management	Mode(s) of Transportation
Carbon fiber plastic	North Bridge New Material Technology (Suzhou) Co., Ltd Jiangsu, China	High quality material specific to our design process	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
1000w DC motor	TomMotor machinery Store Hubei, China	Durable, long service, easy to operate	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
10,000 mAH 22v lipo battery	Shenzhen Saienfeng Technology Co., Ltd. Guangdong, China	High quality, reliable, good ratings	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
Flight controller chipset	Shenzhen Hoshi Electronic Technology Co.,ltd. Guangdong, China	Good ratings/customer support, high reliability.	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
CPU	Shenzhen Touch Think Intelligence Co., Ltd Guangdong China	High quality, reliable company, low price & specific to our design process.	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
GPS chipset	Skylab M&C Technology Co., Ltd Guangdong, China	Reliable manufacturer (14 years), low prices & specific to our design process.	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
Radio transmitter chipset	Skylab M&C Technology Co., Ltd Guangdong, China	High quality & specific to our design process. 14-year-old supplier, good reliability.	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
Night vision drone camera with high powered light	Shanghai Belite Technology Co., Ltd. Shanghai, China	Meets product requirements, (i.e., night vision, mounted, AI enabled)	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
Sensors	Chengdu Meter Technology Co., Ltd. Sichuan, China	Notably reliable manufacturer, so there is lower risk of supply chain disruption. Product that meets requirements.	21	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air
Zapper	Quanzhou Feidun Security Technology Co., Ltd. Fujian, China	Industry leader/most reputable brand in the security tech manufacturing. High ratings and products that are suitable for our design.	Inquiry-Professional quotation required (5-10)	30	Fixed Order Interval	■ Highway ☐ Rail ■ Waterway ☐ Air

FINISHED GOODS INVENTORY *If your organization does not have finished goods inventory, please check this box*: ☐NA

[redacted]	Finished goods produced (per hour)	Frequency of shipping finished goods	Average level of Finished goods inventory on site	Amount of safety stock on site
At the end of Year 1	3	Weekly	2341	0
At the end of Year 2	7	Weekly	6411	1283
At the end of Year 3	16	Weekly	16024	5127
At the end of Year 4	20	Weekly	19883	6413
At the end of Year 5	20	Weekly	19252	7701

What is the lifespan of your finished goods inventory?	■NA	Drones do not have perishable components, especially if they are stored properly. However, they would likely be outdated after about three years.
How will you manage perishability of Finished Goods Inventory?	■NA	

DISTRIBUTION *If your organization does not require distribution, please check this box*: ☐NA

Name of transportation provider/carrier	Reason(s) for selecting this provider/carrier	Frequency of Pick Up / Drop off
United States Postal Service	Lower cost than competitors and ability to ship anywhere within the United States	USPS will pick up shipments weekly

Exhibit 10: Capacity & Resources

	Demand (Per hour)	Capacity (Per hour)	Utilization (%)	Hours of Operation	Bottleneck name and description	How will you manage /adjust the bottleneck to ensure you can appropriately serve or supply your customers?
At the end of Year 1	1.6	8	20.4	425	Soldering chip set components to motherboard, runs at a rate of 4/hour	We will use two/double soldering machines to increase the production rate to 8/hour
At the end of Year 2	2.5	8	30.8	641.4	Soldering chip set components to motherboard, runs at a rate of 4/hour	We will use two/double soldering machines to increase the production rate to 8/hour
At the end of Year 3	9.9	20	49	1025.4	Soldering chip set components to the motherboard, runs at a rate of 4/hour. 3D printing runs at a rate of 2/hour.	We will acquire five new 3d printers(2/h) and three new soldering machines(4/h) to adjust for the increase in demand.
At the end of Year 4	12.3	20	61.7	1282.6	3D printing production is scaled up. Soldering chip sets and 3D printing run at equal rates of 4/hour.	The bottleneck allows a capacity cushion of 20%, so we will focus on maintenance of our critical machines and running enough operation hours.
At the end of Year 5	14.8	20	74	1540.2	Soldering chip sets and 3D printing run at equal rates of 4/hour.	The bottleneck allows a capacity cushion of 24%, so we will focus on maintenance of our critical machines and running enough operation hours.

Show your calculations for the following parameters at the end of Year 1.

Hours of operation/month	Demand/month	Demand/hour	Capacity/month	Capacity/hour	Utilization (%)
(3,400 units / 8/h) /12 = 35.4 Hours/Month	(3,400 units/12 months) = 283.3 units	(3,400)/2,080 = 1.63/hour	8/h * (2080/12) = 1,367 units/month	8 units/hour	(1.63/8) = 20%

Additional resources (beyond your bottleneck) must be allocated appropriately to support operations. Identify which resources have a significant impact on capacity at start up and describe why these are appropriate amounts of resources at start up.

The number of 3D printing and soldering stations we have will determine our capacity. Each 3D printer can manufacture the drone frames at a rate of 2/hour, otherwise, each soldering station runs at a max rate of 4/hour.

Describe adjustments you will make as resource requirements vary with time. Be specific regarding which key resources (beyond your bottleneck) will be adjusted, when and how. If you will make multiple adjustments, explain each.

Apart from our equipment, the size of our factory & the conveyor belt systems will need to grow over time to accommodate our increased production capacity. We will need to purchase two additional soldering machines and five additional 3D printers to meet the demand. In total we will need five soldering stations and ten 3D printers.

How will you manage seasonality? *If your organization does not have seasonal demand, please check this box*: ☐ NA

Exhibit 11: Income Statement

Pro Forma Income Statement

Common Size (as a percent of sales)

Key: Input Field; Build Formula

	Date Ending 2024	%	Date Ending 2025	%	Date Ending 2026	%	Date Ending 2027	%	Date Ending 2028	%
Sales Revenue	$ 23,037,897	100.0%	$ 32,285,871	100.00%	$ 125,778,077	100.00%	$ 152,827,218	100.00%	$ 177,587,410	100.00%
Materials Cost	$ 10,370,000	45.0%	$ 15,646,500	48.46%	$ 62,546,899	49.73%	$ 78,237,136	51.19%	$ 93,950,187	52.90%
Direct Labor Cost	$ 1,254,713	5.4%	$ 1,254,713	3.89%	$ 3,221,631	2.56%	$ 3,366,604	2.20%	$ 3,518,102	1.98%
Total Cost of Goods Sold	$ 11,624,713	50.5%	$ 16,901,213	52.35%	$ 65,768,530	52.29%	$ 81,603,740	53.40%	$ 97,468,289	54.88%
Gross Profit	**$ 11,413,184**	49.5%	**$ 15,384,658**	47.65%	**$ 60,009,547**	47.71%	**$ 71,223,477**	46.60%	**$ 80,119,122**	45.12%
Operating Expenses										
Indirect Labor Cost	$ 4,441,713	19.28%	$ 4,641,590	14.38%	$ 6,326,009	5.03%	$ 6,610,680	4.33%	$ 6,908,160	3.89%
Advertising and Promotion Expense	$ 513,919	2.23%	$ 513,919	1.59%	$ 685,226	0.54%	$ 685,226	0.45%	$ 685,226	0.39%
Research and Development Expense	$ 17,278,422	75.00%	$ 16,142,935	50.00%	$ 37,733,423	30.00%	$ 38,206,804	25.00%	$ 44,396,853	25.00%
Commissions Expense	$ 1,020,000	4.43%	$ 1,539,300	4.77%	$ 6,152,100	4.89%	$ 7,695,600	5.04%	$ 9,240,900	5.20%
General Insurance Expense	$ 25,000	0.11%	$ 25,000	0.08%	$ 25,000	0.02%	$ 25,000	0.02%	$ 25,000	0.01%
Website Expense	$ 12,500	0.05%	$ 7,500	0.02%	$ 7,500	0.01%	$ 7,500	0.00%	$ 7,500	0.00%
Licenses	$ 11,519	0.05%	$ -	0.00%	$ -	0.00%	$ -	0.00%	$ -	0.00%
Depreciation Expense	$ 49,817	0.22%	$ 49,817	0.15%	$ 98,803	0.08%	$ 98,803	0.06%	$ 98,803	0.06%
Other overhead(utilities, office supples, misc)	$ 119,121	0.52%	$ 165,499	0.51%	$ 633,102	0.50%	$ 768,496	0.50%	$ 892,449	0.50%
		0.00%		0.00%		0.00%		0.00%		0.00%
Total Operating Expenses	**$ 23,472,013**	101.88%	**$ 23,085,561**	71.50%	**$ 51,661,164**	41.07%	**$ 54,098,108**	35.40%	**$ 62,254,891**	35.06%
Earnings Before Interest and Taxes	**$ (12,058,829)**	-52.34%	**$ (7,700,904)**	-23.85%	**$ 8,348,384**	6.64%	**$ 17,125,369**	11.21%	**$ 17,864,231**	10.06%
Interest Expense	$ 674,065	2.93%	$ 561,434	1.74%	$ 438,666	0.35%	$ 304,849	0.20%	$ 158,988	0.09%
Earnings Before Taxes	**$ (12,732,894)**	-55.27%	**$ (8,262,337)**	-25.59%	**$ 7,909,718**	6.29%	**$ 16,820,520**	11.01%	**$ 17,705,243**	9.97%
Income Tax Expense	$ -	0.00%	$ -	0.00%	$ 1,661,041	1.32%	$ 3,532,309	2.31%	$ 3,718,101	2.09%
Net Income (Loss)	**$ (12,732,894)**	-55.27%	**$ (8,262,337)**	-25.59%	**$ 6,248,677**	4.97%	**$ 13,288,211**	8.69%	**$ 13,987,142**	7.88%
Operating Cash Flow	$ (9,476,658)		$ (6,033,896)		$ 6,694,026		$ 13,627,844		$ 14,211,545	
Free Cash Flow	$ 5,700,335		$ 3,655,344		$ 2,059,371		$ 1,005,322		$ 2,037,096	

Statement of Retained Earnings

Beginning Balance of Retained Earnings	**$ -** / **$ (12,732,894)** / **$ (20,995,232)** / **$ (14,746,555)** / **$ (1,458,344)**
Net Income (Loss)	(12,732,894) / (8,262,337) / 6,248,677 / 13,288,211 / 13,987,142
Dividends to Stockholders	- / - / - / - / -
Ending Retained Earnings	**$ (12,732,894)** / **$ (20,995,232)** / **$ (14,746,555)** / **$ (1,458,344)** / **$ 12,528,798**

Exhibit 12: Balance Sheet

Pro Forma Balance Sheet

Common Size (as a percent of total assets)

Key: Input Field; Build Formula

	As of Inception Date	%	Date Ending 2024	%	Date Ending 2025	%	Date Ending 2026	%	Date Ending 2027	%	Date Ending 2028	%
ASSETS												
Current Assets												
Cash and Cash Equivalents	$ 50,162,707	95.49%	$ 35,210,442	88.81%	$ 25,209,734	82.74%	$ 24,936,815	63.46%	$ 35,472,746	67.84%	$ 44,914,609	68.26%
Accounts Receivable	-	0.00%	$ 1,919,825	4.84%	$ 2,690,489	8.83%	$ 10,481,506	26.68%	$ 12,735,601	24.36%	$ 14,798,951	22.49%
Inventory	-	0.00%	$ 199,423	0.50%	$ 300,894	0.99%	$ 1,202,825	3.06%	$ 1,504,560	2.88%	$ 3,613,469	5.49%
Total Current Assets	$ 50,162,707	95.49%	$ 37,329,690	94.15%	$ 28,201,118	92.55%	$ 36,621,146	93.20%	$ 49,712,908	95.08%	$ 63,327,029	96.24%
Fixed (Long-Term) Assets												
Machinery and Equipment	$ 508,960	0.97%	$ 508,960	1.28%	508,960	1.67%	1,010,060	2.57%	$ 1,010,060	1.93%	$ 1,010,060	0.01535
Buildings	$ 1,859,550	3.54%	$ 1,859,550	4.69%	$ 1,859,550	6.10%	$ 1,859,550	4.73%	$ 1,859,550	3.56%	$ 1,859,550	0.02826
Total Gross Fixed Assets	$ 2,368,510	4.51%	$ 2,368,510	5.97%	$ 2,368,510	7.77%	$ 2,869,610	7.30%	$ 2,869,610	5.49%	$ 2,869,610	0.043611
Less: Accumulated Depreciation	$ -	0.00%	$ 49,817	0.13%	$ 99,635	0.33%	$ 198,438	0.51%	$ 297,241	0.57%	$ 396,044	0.006019
Net Fixed Assets	$ 2,368,510	4.51%	$ 2,318,693	5.85%	$ 2,268,875	7.45%	$ 2,671,172	6.80%	$ 2,572,369	4.92%	$ 2,473,566	0.037592
Total Assets	**$ 52,531,217**	100.00%	**$ 39,648,383**	100.00%	**$ 30,469,993**	100.00%	**$ 39,292,319**	100.00%	**$ 52,285,277**	100.00%	**$ 65,800,595**	100.00%
LIABILITIES AND STOCKHOLDERS' EQUITY												
Liabilities												
Current Liabilities												
Accounts Payable	$ -	0.00%	$ 864,167	2.18%	$ 1,303,875	4.28%	$ 5,212,242	13.27%	$ 6,519,761	12.47%	$ 7,829,182	11.90%
Accrued Labor Costs	$ -	0.00%	$ 237,351	0.60%	$ 245,679	0.81%	$ 397,818	1.01%	$ 415,720	0.80%	$ 401,010	0.61%
Current Maturity of LT Debt	$ -	0.00%	$ 1,251,458	3.16%	$ 1,364,089	4.48%	$ 1,486,857	3.78%	$ 1,620,674	3.10%	$ 1,766,535	2.68%
Total Current Liabilities	$ -	0.00%	$ 2,352,975	5.93%	$ 2,913,643	9.56%	$ 7,096,917	18.06%	$ 8,556,155	16.36%	$ 9,996,727	15.19%
Long-Term Liabilities												
LT Debt Less Current Maturities	$ 7,489,612	14.26%	$ 6,238,154	15.73%	$ 4,874,065	16.00%	$ 3,387,209	8.62%	$ 1,766,535	3.38%	$ -	0.00%
Total Liabilities	**$ 7,489,612**	14.26%	**$ 7,339,672**	18.51%	**$ 6,423,620**	21.08%	**$ 8,997,269**	22.90%	**$ 8,702,016**	16.64%	**$ 8,230,192**	12.51%
STOCKHOLDER'S EQUITY												
Common Stock	$ 45,041,605	85.74%	$ 45,041,605	113.60%	$ 45,041,605	147.82%	$ 45,041,605	114.63%	$ 45,041,605	86.15%	$ 45,041,605	68.45%
Retained Earnings	$ -	0.00%	$ (12,732,894)	-32.11%	$ (20,995,232)	-68.90%	$ (14,746,555)	-37.53%	$ (1,458,344)	-2.79%	$ 12,528,798	19.04%
Total Stockholders' Equity	**$ 45,041,605**	85.74%	**$ 32,308,710**	81.49%	**$ 24,046,373**	78.92%	**$ 30,295,050**	77.10%	**$ 43,583,261**	83.36%	**$ 57,570,403**	87.49%
Total Liabilities and Stockholders' Equity	**$ 52,531,217**	**100.00%**	**$ 39,648,383**	**100.00%**	**$ 30,469,993**	**100.00%**	**$ 39,292,319**	**100.00%**	**$ 52,285,277**	**100.00%**	**$ 65,800,595**	100.00%

Exhibit 13: Cash Flow Statement

Pro Forma Statement of Cash Flows

Key
Input Field
Build Formula

	As of Inception Date	Date Ending 2024	Date Ending 2025	Date Ending 2026	Date Ending 2027	Date Ending 2028
Cash Flows From (For) Operations						
Net Income	$ -	$ (12,732,894)	$ (8,262,337)	$ 6,248,677	$ 13,288,211	$ 13,987,142
Depreciation		49,817	49,817	98,803	98,803	98,803
Changes in Current Assets						
Increase in Accounts Receivable	-	1,919,825	770,665	7,791,017	2,254,095	2,063,349
Increase in Inventories	-	199,423	101,471	901,931	301,735	2,108,908
Changes in Current Liabilities						
Increase in Accounts Payable	-	864,167	439,708	3,908,367	1,307,520	1,309,421
Increase in Accrued Labor Costs	-	237,351	8,328	152,139	17,902	(14,710)
Net Cash Flow From (For) Operating	$ -	$ (13,700,807)	$ (8,636,619)	$ 1,715,038	$ 12,156,605	$ 11,208,398
Cash Flow (For) From Investing Activities						
Fixed Asset Purchases/Sales	(2,368,510)	-	-	(501,100)	-	-
Net Cash Flow (For) From Investing	$ (2,368,510)	$ -	$ -	$ (501,100)	$ -	$ -
Cash Flow From (For) Financing Activities						
Issuance of Common Stock	$ 45,041,605	$ -	$ -	$ -	$ -	$ -
Long Term Debt Borrowings/Repayments	7,489,612	(1,251,458)	(1,364,089)	(1,486,857)	(1,620,674)	(1,766,535)
Dividends Paid to Stockholders	-	-	-	-	-	-
Net Cash Flows From (For) Financing	$ 52,531,217	$ (1,251,458)	$ (1,364,089)	$ (1,486,857)	$ (1,620,674)	$ (1,766,535)
Net Change in Cash	$ 50,162,707	$ (14,952,265)	$ (10,000,708)	$ (272,919)	$ 10,535,931	$ 9,441,863
Beginning Cash Balance	0	$ 50,162,707	$ 35,210,442	$ 25,209,734	$ 24,936,815	$ 35,472,746
Net Change in Cash	$ 50,162,707	$ (14,952,265)	$ (10,000,708)	$ (272,919)	$ 10,535,931	$ 9,441,863
Ending Cash Balance	$ 50,162,707	$ 35,210,442	$ 25,209,734	$ 24,936,815	$ 35,472,746	$ 44,914,609

Exhibit 14: Financial Statement Notes

Note 1: Assumptions
We assume that in the first year, we will have no cash on hand. We also assumed that we will maintain one month of inventory (materials cost) at the end of each year and accrued salaries would be equal to two weeks of salaries. We decided to purchase the factory instead of rent so there will be no rent expenses. Our R&D expenses will cover the research into autonomous drone technology, design, product development & continuous updates. We are depreciating our 3D printers over 11 years & our soldering machines over five years.

Note 2: Investment Capital
We are taking out loans from an investment bank and selling common stock. We assume that we will be using five-year loans at 9% interest. In the first year we will take on a 7.5 million loan and sell 45 million dollars in common stock.

Note 3: Capital Investment
We will need to purchase a 1.8-million-dollar factory, as well as equipment worth around half a million dollars. We purchased 10 3D printers for $98,000 each in total for the 5 years. We also have a total of 5 soldering machines for $3,700 each and the conveyer belt for $11,560. These are all the machines and equipment we will be purchasing for our manufacturing purposes. We will also

Note 4: Risks
- *Risk regarding industry competition.* Multiple companies in the industry are developing autonomous drones which increases competition and the need for innovation in the space.
- *Risk regarding market penetration.* The current largest drone manufacturer, DJI, has a 74% market share. Facing such a giant will prove challenging in the near future.
- *Risk relating to liability.* Drones and AI are a new technology. Knowing this, there is a large risk of a software or hardware fault leading to an accident. However, WatchHawk will take quality control and safety very seriously to ensure the lowest possibility of this occurring.
- *Risk relating to foreign suppliers.* Our company utilizes foreign suppliers for raw materials necessary for production. This decision increases supply chain complexity and increases logistics risk.
- *Risk regarding inflation.* Inflation is a growing concern is modern economies. As inflation increases, our production costs in turn will increase which may reduce our profitability.
- *Risk regarding product development.* There is a feasible risk that our technology will not be successfully developed. Since we are contracting another firm for the initial development of the flight system, we lose direct control in the production process.

Exhibit 15: Financial Ratios

Financial Ratios Table

Key
Input Field
Build Formula

	Date Ending 2024	Date Ending 2025	Date Ending 2026	Date Ending 2027	Date Ending 2028	Industry Average Ratios
Liquidity Ratios						
Current Ratio	**15.86**	**9.68**	**5.16**	**5.81**	**6.33**	2.18
Quick Ratio	**15.78**	**9.58**	**4.99**	**5.63**	**5.97**	1.83
Operating Cycle	**33.58**	**33.82**	**33.91**	**34.01**	**37.84**	376.80
Leverage Ratios						
Debt/Equity	**0.14**	**0.11**	**0.08**	**0.04**	**0.00**	0.10
Times Interest Earned	**-17.89**	**-13.72**	**19.03**	**56.18**	**N/A**	-615.78
Asset Management Ratios						
Inventory Turnover	**115.52**	**107.30**	**104.57**	**101.58**	**49.15**	2.62
Receivables Turnover	**12.00**	**12.00**	**12.00**	**12.00**	**12.00**	5.60
Fixed Asset Turnover	**9.94**	**14.23**	**47.09**	**59.41**	**71.79**	1.46
Profitability Ratios						
Gross Profit Margin	**0.50**	**0.48**	**0.48**	**0.47**	**0.45**	0.29
Operating Profit Margin	**-0.52**	**-0.24**	**0.07**	**0.11**	**0.10**	-3.60
Return on Assets	**-0.32**	**-0.27**	**0.16**	**0.25**	**0.21**	-0.36
DuPont Analysis						
Net Profit Margin	**-0.55**	**-0.26**	**0.05**	**0.09**	**0.08**	-3.60
Total Asset Turnover	**0.58**	**1.06**	**3.20**	**2.92**	**2.70**	0.25
Equity Multiplier	**1.23**	**1.27**	**1.30**	**1.20**	**1.14**	2.36
Return on Equity	**-0.39**	**-0.34**	**0.21**	**0.30**	**0.24**	-1.09

Exhibit 16: Financial Analysis

Liquidity

Our company maintains quick and current ratios between roughly 5-16, with the most liquidity in the first year when we obtain most of our financing. This shows that we are relatively more solvent compared to our competitors 2/1.8. It could be that we are using our cash more efficiently, or that we aren't spending enough. Our operating cycle is about 36 compared to the industry average of 365, which shows that we are 100x more efficient than the industry average. This could be due to our assumption that receivables would be paid each month.

Financial Leverage

Our company has a financial leverage D/E ratio of 0.14-0, decreasing year over year, compared to the industry average of 0.1. This shows that we have a similar level of leverage, compared to the industry average. Our TIE ratio in Year 1 starts at –17.41, moving to a high of 56, however by Year 5 we plan on paying off our debt, making that ratio irrelevant. The industry average is –615.78, so we are projected to use our debt more effectively.

Asset Management

The inventory turnover (115 - 49) is much higher than that for the industry (2.62) but decreases yearly. This is due to our inventory being turned over monthly. The fixed asset turnover (9 - 71) is higher than the industry average (1.46) and increases yearly. This suggests that we manage our assets better than our competitors. Our company has a significantly higher fixed asset turnover due to the following assumptions: receivables will be collected monthly, we won't need to replace any fixed assets during the five-year period, and our fixed assets will be enough to maintain capacity.

Profitability

The company's gross profit margin exceeds the industry average in all years. Ours is 0.45-0.50 and the industry average is 0.29. Our profit margin decreases throughout the years as we mature our skimming pricing strategy. The operating profit margin is also higher than the industry average. Ours is -0.52 - 0.11 and the industry average is –3.6. Our operating profit margin increases throughout the years as our research and development takes away less of our budget, increasing our bottom line. The return on assets is higher than the industry average with values of (-0.32-0.25) compared to –0.36 for the industry. This value increases every year due to better asset utilization. From these three ratios, we conclude that the company is expected to have profitability better than that of the industry after three years. Over time we expect to fine tune our manufacturing process, thereby driving costs out and improving profitability. Our return on equity starts at –0.4 and moves up to a high of 0.35, more than int IA of –1.1 , showing that our business model is more profitable, with higher utilization of assets, and more financial leverage.

DuPont Analysis

The profit margin (-0.55-0.09), asset turnover (0.58-2.70), and equity multiplier (1.14-1.3) all exceed the industry average (-3.6, 0.25, 2.36 respectively), with the return on equity higher than the industry mean (-0.39 - 0.30 vs -1.09). Our use of debt is leveraging our return and as our profitability increases, we can reduce our reliance on leverage.

Valuation Method

The valuation is based on the method of multiples using the price to sales ratio of the industry applied to the projected revenues. Our industry P/S average ratio is 21.08. Our first year P/S ratio is .85. Our second year P/S ratio is 1.07. Our third year P/S ratio is 0.34. Our fourth year P/S ratio is .28. Our fifth year P/S ratio is .24. Our P/S ratio is much better than the technology sector's ratio. As we progress through the years, we achieve better P/S ratios for our stockholders.

Bibliography

In our looking for an attractive, growing industry we found that video surveillance is growing at a rate above expectation (9%):

https://www.sdmmag.com/State-of-the-Security-Market-Series

After finding autonomous security drones to be an attractive idea, we had to make sure it was feasible. This article by Aryan Bajaj suggests it is not only feasible, but inevitable for drones to be so capable:

https://www.analyticsvidhya.com/blog/2022/07/the-power-of-artificial-intelligence-in-drones/

Since our target market is California-based businesses, we found it wise to select a factory site that would be centrally located. It also has the space to accommodate our production needs at an affordable price ($1,859,000):

(LoopNet. (n.d.). 110-142 s Aurora St, Stockton, CA 95202. LoopNet. https://www.loopnet.com/Listing/110-142-S-Aurora-St-Stockton-CA/29367121/)

3-D printers presented a unique way for us to manufacture frames at a discounted cost. The base cost of the printer is $98,000:

(Project 3D Printers. (n.d.). Kings 600 pro industrial SLA 3D Printer. Project 3D Printers. https://project3dprinters.com/products/kings-600-pro-industrial-sla-3d-printer?currency=USD&variant=39456102776906&stkn=b8c2e19daa00&srsltid=AfmBOooVGfmx0QsA4sFhP6hVGdO_uUT3rhlsg7_ScxRaYLUBow77iIjyNnI)

Plastic is the ingredient required for 3-D printing; this supplier offers it for an average of $70 per frame produced:
Kexcelled (n.d.). 3D Printer Carbon Fiber Reinforced Plastic. Alibaba. https://www.alibaba.com/product-detail/Kexcelled-3D-Printer-Carbon-Fiber-Reinforced_1600479601759.html?spm=a2700.galleryofferlist.p_offer.d_title.7328227fbjowgL&s=p)

Soldering machines are the backbone of our manufacturing operation allowing us to connect the components together in a durable fashion. They cost $3,700 per machine:

(YX. (n.d.). YX SMT 5 Axis Solder Iron Robot Auto. Alibaba. https://www.aliexpress.us/item/3256805204758806.html?src=google&aff_fcid=cda58ccd931e4802886d18bfb0a807e9-1695916651413-08811-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=cda58ccd931e4802886d18bfb0a807e9-1695916651413-08811-UneMJZVf&terminal_id=3153291e42064725a97bdc1e6a25819c&afSmartRedirect=y&gatewayAdapt=glo2usa)

This Conveyer belt system costs $11,560 and enables the efficient production and movement of our drones.

(F.S. Industries. (n.d.). Extendable flex power 1.9 conveyor. https://shop.fsindustries.com/product/b-fp-1-9-30-12-power-1-9-conveyor/51963)

To properly estimate our costs over the projection period we included inflation as a part of our calculation. The Federal Reserve Bank of Cleveland projects inflation for the following year to be ~3.5%:

(Federal Reserve Bank of Cleveland. (n.d.). Inflation nowcasting. Cleveland Fed. https://www.clevelandfed.org/indicators-and-data/inflation-nowcasting)

Manufacturing in factories is energy intensive so it was important that we predict our electric bill cost:

(U.S. Energy Information Administration. (n.d.). Current Issues and Trends. https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_c.pdf)

Liability coverage is important for a security company. In an adverse event we could be held liable for millions of dollars in damages. This company quotes $1,000,000 of liability at $500 a month. So, we multiplied that rate to get a quote for coverage of roughly $4,000,000 of liability at any given time:

(Insureon. (n.d.). *How much does $1 million liability insurance cost?.* Insureon. https://www.insureon.com/small-business-insurance/general-liability/1-million-dollar-liability-cost)

California agricultural production output and current growth (9%):

(CDFA. (n.d.). California Agriculture Production Statistics. California Department of Food and Agriculture. https://www.cdfa.ca.gov/Statistics/#:~:text=In%202022%2C%20California's%20farms%20and,compared%20to%20the%20previous%20year)

Our market research shows a need for surveillance on open space farms. As this article shows, there is disruptive wildlife in the state, especially in proportion to other states in the United States:

(KRON4 News. (n.d.). California ranks 2nd for most deaths caused by animal attacks: https://www.kron4.com/news/california/california-ranks-2nd-for-most-deaths-caused-by-animal-attacks-report/)

To approximate our market segment size (warehouses) we studied this article written by the Southern California Association of Governments (34,000 in the state):

(Southern California Association of Governments. (n.d.). Industrial Warehouse Study. https://scag.ca.gov/post/industrial-warehousing-study)

To estimate the size agricultural industry in California we found that there are more than 77,000 ranches and farms in California:

(California Exposition & State Fair. (n.d.). CA-Farms-Ranches. https://calexpostatefair.com/wp-content/uploads/2021/01/CA-Farms-Ranches.pdf)

To effectively promote our product, we deemed it necessary to attend expos for product demonstrations. The World Ag Expo has a booth price of roughly $3000:

(World Ag Expo. (n.d.). Booth pricing 2024. https://www.worldagexpo.com/exhibitors-2/#booth-pricing-2024)

A prominent expo in the warehousing space is run by IWLA. It allowed us to directly market our product to the Warehouse industry for a booth fee of $5000:

(International Warehouse Logistics Association. (n.d.). 2023 IWLA Expo Registration. IWLA. https://iwla.users.membersuite.com/events/82de7c93-0078-cefc-3ff2-0b43cc8a8549/details)

We used this expo to determine pricing for attending a trade show, around $500.
(Tanium Converge. (n.d.). Converge 2023 Terms & Conditions. Tanium. https://converge.tanium.com/2023/terms-and-conditions)

(Intermodal Association of North America. (n.d.). Expo Registration. IANA. https://www.intermodal.org/intermodalexpo/registration)

To ship our product, we chose to use USPS as a distributor and a single zone distribution pricing system. A cost of $15.75 per unit.

(United States Postal Service. (2023, July 9). Price List. United States Postal Service. https://pe.usps.com/text/dmm300/Notice123.htm?_gl=1*oi1cx_gcl_au*MTI2MTQzNTUzNy4xNjk1OTE15NjM5_ga*MTIwNzc1NzMwMC4xNjk1OTE15NjM5_ga_3NXP3C8S9V*MTY5NTkxNTYzOC4xLjEuMTY5NTkxNTY3OC4wLjAuMA..#_c451)

To properly understand the financial makeups of drone companies we researched UAS Drone Corporation through a stat business, ReadyRatios:

ReadyRatios. (n.d.). UAS Drone Corp (USDR), Financial Analysis and Rating. ReadyRatios. https://www.readyratios.com/sec/USDR_uas-drone-corp)

Using Parrot's financial statements, we can determine an industry standard gross margin:

(PARROT. (2023, March 16). Parrot 2022 Full-Year Earnings. GlobeNewswire. https://www.globenewswire.com/en/news-release/2023/03/16/2628325/0/en/PARROT-2022-FULL-YEAR-EARNINGS.html)

Each drone has two batteries at a cost of $79.90 each, which power the drone:
(VANT (n.d.). 22.2V 6S 10000mAh 25C Battery. Alibaba. https://www.alibaba.com/product-detail/VANT-22-2V-6S-10000mAh-25C_1600884628358.html?spm=a2700.7724857.0.0.328a58f2QTHfo5&s=p)

The motor cost $37 and is a part of our company's material costs. There are four motors per drone.
TomMotor. (n.d.). Marine 12-24V. Alibaba.
https://www.aliexpress.com/i/3256801398772462.html?gatewayAdapt=4itemAdapt)

Each drone is equipped with a flight controller as a part of its chip set, so it can function properly. The flight controller costs $60:
SpeedyBee (n.d.). F405 V3 3-6S Flight Controller. Alibaba. https://www.alibaba.com/product-detail/2023-SpeedyBee-F405-V3-3-6S_1600865223610.html?spm=a2700.galleryofferlist.normal_offer.d_title.c18617b7t8hzy7)

The drone's computer functions are based on its CPU and chipset, they cost $47.50 per unit:

Shenzen TTI. (n.d.). RK3568 Quad-Core 4G LTE Android CPU Chipset. Alibaba. https://www.alibaba.com/product-detail/RK3568-Quad-Core-4G-LTE-Android_1600876345069.html?spm=a2700.galleryofferlist.p_offer.d_title.43cb5591gpdHA1&s=p)

A core function of the camera is its ability to see the environment, even in low light. So, it is equipped with a high-tech night-vision camera at a cost of $278 per unit:

Shanghai Belite Technology. (n.d.). 8MP 4K UAV 3-Axis Zoom Drone Camera. Alibaba. https://www.alibaba.com/product-detail/8MP-4K-UAV-3-Axis-Zoom_1600664577543.html)

For the drone to properly maneuver around objects, it is equipped with a distance sensor that costs $89.30:

Chengdu JTR Meter Technology. (n.d.). PTFS-200m Pulse CMOS Type Square Distance Sensor. Alibaba.
https://www.alibaba.com/product-detail/PTFS-200m-Pulse-Cmos-Type-Square_1600946295141.html?spm=a2700.galleryofferlist.p_offer.d_title.27ce37e9CutZrq&s=p)

Radio transmitter (Important for navigation & video transmission functions used prices to determine our costs $30):

Skylab M&C Technology (n.d.). Long-Distance Access Point MT7620A Drone Radio Transmitter. Alibaba.
https://www.alibaba.com/product-detail/Long-Distance-Access-Point-MT7620A-Drone_60817766451.html?spm=a2700.galleryofferlist.p_offer.d_price.2989a5583uXV6x&s=p)

The drone requires a GPS module for proper orientation. Skylab distributes one appropriate for the drone for $7.66 a piece:

Skylab M&C Technology (n.d.). Small Size High-Performance Low-Price GPS Module. Alibaba.
https://www.alibaba.com/product-detail/Small-Size-High-Performance-Low-Price_60477933566.html?spm=a2700.galleryofferlist.p_offer.d_title.4f6069a4Jx0npa&s=p)

Parrot Drones is another drone production company. Financial statements were used to calculate industry average ratios:

Another drone production company. Financial statements were used to calculate industry average ratios.
Parrot SA. (2023, March 16). PARROT CP - Resultats Annuels 2022. https://www.parrot.com/assets/s3fs-public/2023-03/PARROT_CP_Resultats-Annuels-2022_20230316_EN_DEF.pdf)

AgEagle is another drone production company. Financial statements were used to calculate industry average ratios:

(AgEagle Aerial Systems Inc. (n.d.). Form 10-K: Annual Report [PDF]. https://s3.amazonaws.com/sec.irpass.cc/2346/0001654954-23-004388.pdf)

EHang Holdings is another drone production company. Financial statements were used to calculate industry average ratios:

EHang Holdings Limited. (n.d.). Investor Relations: Financial Reports. https://ir.ehang.com/static-files/3896643a-6595-4f6d-8041-10e1ab8d2599)

FICA used in determining our projected FICA tax rate of 7.65%:

(NerdWallet. (n.d.). FICA Tax Withholding. Nerd Wallet. https://www.nerdwallet.com/article/taxes/fica-tax-withholding#:~:text=FICA%20taxes%20are%20a%20combination,Medicare%20tax%20on%20your%20earnings)

FUTA used in determining our projected FUTA tax rate of 6%:

(Paychex. (n.d.). What Is FUTA? https://www.paychex.com/articles/payroll-taxes/what-is-futa#:~:text=For%20each%20employee%2C%20multiply%20the,a%20maximum%20of%20%247%2C000%20annually)

Stats provided by the U.S. Buerua of Labor Statistics, used in determining our projected wage growth of 4.5% annually:

U.S. Bureau of Labor Statistics. (2023, March 3). Employment Cost Index - March 2023. https://www.bls.gov/news.release/pdf/eci.pdf)

Stun Gun: Used to determine price of stun gun: $1200

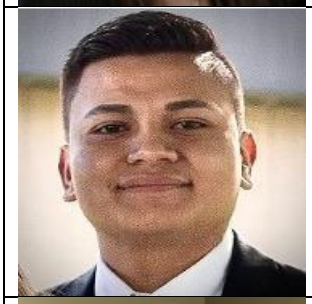
Police military long distance electric shocking Shocker Device Needle Stun Gun. Made In China. n.d.). https://fdsecurity.en.made-in-china.com/product/mOnaXTzAOBRj/China-Police-Military-Long-Distance-Electric-Shocking-Shocker-Device-Needle-Stun-Gun.html

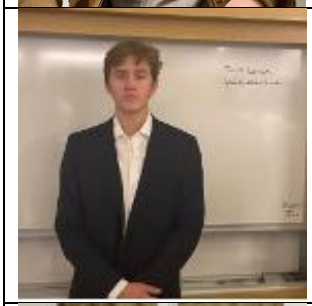
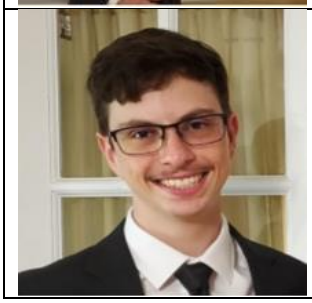
SUTA: used in gathering our assumptions of SUITA tax rates between 1.5-6.2.
(Thomas and Company. (n.d.). California Unemployment Tax Rates Hold Steady for 2022. [https://thomas-and-company.com/unemployment-tax/california-unemployment-tax-rates-hold-steady-for-2022/#:~:text=Effective%20January%201%2C%202022%2C%20unemployment,also%20remain%20stable%20at%203.40%25](https://thomas-and-company.com/unemployment-tax/california-unemployment-tax-rates-hold-steady-for-202)

We used Amazon Web Services to look at their service charge per hour to run a website and we converted it to a yearly charge. This is our website expense.
(Amazon Web Services, Inc. (n.d.). Amazon EC2 On-Demand Pricing. https://aws.amazon.com/ec2/pricing/on-demand/)

We used Forbes Advisor to estimate the cost of a web developer ($100 per hour) for our website.
(Forbes Advisor. (n.d.). How Much Does a Website Cost? https://www.forbes.com/advisor/business/software/how-much-does-a-website-cost/)

Meet the Team

	My name is Mia Masessa and I am from Princeton, New Jersey. I am a junior majoring in Management as well as a member in Alpha Sigma Alpha, and Operation Smile. I spent my summer interning with a nonprofit organization doing work for social media marketing and I hope to gain more information in that field.
	My name is Sara Quigley and I am from Mount Vernon, Virginia. I am a Junior Business Management major, and here at JMU I am involved with the Gamma Phi Beta sorority and participated in a study abroad program for international finance. I spent my summer interning at QinetiQ US with the finance and contract departments and hope to continue my career there.
	My name is Jonathan Arteaga and I am from Harrisonburg, VA. I am a Junior International Business Major and a member of the Phi Chi Theta business fraternity. I also work for Rosetta Stone as an Enterprise Account Executive. This summer I will be traveling to Valencia, Spain for a study abroad internship through JMU.
	I'm Kevin Forst, and my hometown is Haymarket, Virginia. I'm majoring in Computer Information Systems and will be applying to the BSAN concentration this semester. Outside of school, I like to spend my time playing golf, cooking, and learning new things.

	I'm Noah Kurtz, from Alexandria Virginia and I am a junior computer information systems major. Outside of class I like making computer games, studying Japanese, and I am a member of the jiu jitsu club. During the summer, I worked as a data entry specialist for a DOD contracting company. Next summer I will be interning as a technology consultant at Protiviti.
	My name is Jack Lynch and I am from Virginia Beach, Virginia. I am majoring in Finance and currently in the Kappa Sigma Fraternity. I hope to purse an internship this upcoming summer in a big city. Other than that, I have interests in real estate, investments in general, and entrepreneurship. Outside of school, I like to be with my friends/family, play golf, lift, and watch sports.
	My name is Luke Fisher, and I am from Covington VA. I am a Junior Computer Information Systems major. I am a member of the Association for Information Systems along with Centennial Scholars and the Association of Supply Chain Management. Last summer I was a maintenance technician for my local county, and this summer I hope to pursue an internship related to CIS or business analytics.