

SkyPulse Technologies

Creating a startup business plan

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ABSTRACT

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Part I.

Introduction

CHAPTER 1

COMPANY DESCRIPTION

We are 4 young and motivated people who have founded a start-up called SkyPulse Technologies. SkyPulse Technologies is a Public limited company. With this newly founded company, we have set ourselves the goal of speeding up and optimizing the transport of medicinal samples. This new time-optimized transport makes it possible to help patients better and improve collaboration between laboratories and hospitals. This transportation is achieved with our drones, which are controlled with artificial intelligence. These drones fly their routes between hospitals and laboratories and transport the respective samples.

Our target market is therefore the pharmaceutical industry, and more specifically hospitals and laboratories.

Our start-up is divided into two different sectors. There is a technical department and a commercial department. The technical department is further divided into three different subdivisions:

- Research and development
- Planning and operational organization
- Production

The commercial department is also divided into three different subdivisions:

- Finance and accounting
- Administration
- Distribution

We have divided up the various departments according to our interests. Céline and Fabian are responsible for the Research and development department. Xenia is responsible for the Planning and operational

organization and also for the production. Jonas is responsible for the commercial department and all corresponding subdivisions.

CHAPTER 2

OWNERSHIP

Our main objective is to help patients. For this goal we created our drones which are controlled by Artificial Intelligence. They are programmed to fly their corresponding route. These drones can transport medicine or medicinal samples. With these drones we can make the collaboration more time-efficient. Therefore problems as long delivery times with organ donating and urgent samples can be eliminated. Because for the patients, every minute counts. The drones can transport up to 5kg each. It is also possible to transport critical samples such as organs, which have to be stored under special conditions. We offer the appropriate transportation for each sample required and thus guarantee that the samples reach their destination in the highest quality. However, in order to guarantee the highest possible quality of the samples, it should be noted that the transportation of the drones is dependent on the weather. If the weather is too bad (strong winds, thunderstorms), the drones cannot fly, as the samples and therefore their corresponding quality would be at risk. For the transportation times, the samples are divided into three different categories:

- Very urgent
- urgent
- not urgent

Customers can specify how urgent their sample is and in what time frame the sample should be delivered. The customer must therefore provide all important information about the sample so that it can be dealt with individually.

For our locations, we focus on a small set of either large, economically strong cities, cities with a strong pharma presence or cities in dire need of this technology. The set of cities includes the following:

- Basel

- Vienna
- London
- Paris
- Madrid
- Barcelona
- Berlin
- Kiev

We chose these locations because we need to validate our product/service idea on focused markets that resemble ones where the finished product is deployed in. Rural areas or small cities are also important, but not the key market of this company. A nationwide or even continent/worldwide expansion is not in the scope of a startup and can be achieved once our idea has been validated in different cities. Therefore large cities that are economically stable and have a strong pharma presence are the easiest to target in the beginning. There we will be able to test our drones and optimize them accordingly.

In order to know all possible contact points with our customers, we have integrated a representative from a laboratory and a representative from a hospital into our start-up.

For the representative of the laboratory we chose Jona Müller, he is a 32 year old chemical laboratory technician who works at Viollier. He aims to lead a major research project in pharmaceutical analysis. Jona Müller represents a dedicated and skilled professional, deeply involved in the pharmaceutical industry's innovative and dynamic nature, and an ideal customer for a drone delivery service catering to laboratory needs.

For the representative of the hospital we chose Dr. Sarah Becker. She is a 38 year old oncologist who works at a cantonal hospital. She aims to contribute to groundbreaking research in targeted cancer therapies. Interested in developing supportive care programs for cancer survivors Dr. Sarah Becker represents a compassionate and innovative medical professional, dedicated to advancing cancer treatment and care. Her reliance on the drone delivery service highlights its importance in providing timely and critical medical supplies in the field of oncology.

CHAPTER 3

COMPETITOR ANALYSIS

Drone transportation is not yet very widespread, so there are not yet many competitors on the market. However, there are already one or two companies that offer drone transportation. One company called Zipline [12] also offers drone transportation for medical samples, among other things. However, this is only a sub-category for them. They also transport food, for example. The same applies to another company called DroneUp [7], which offers almost the same services as Zipline [12]. We at SkyPulse Technologies only offer transportation for medical samples and can therefore also transport very critical samples such as organs. By focusing only on the pharmaceutical industry, we are able to provide customized transport for samples and cater to the specific needs of our customers. With this service we distinguish ourselves from other companies that are already on the market. Our goal to help the patients, is achieved through Drone delivery with the highest quality, so that this transportation becomes an everyday business in the pharma industry.

Part II.

Business plan

CHAPTER 4

COMPANY DESCRIPTION

4.1. Organizational chart

Through previous endeavors, research and talks with various people which work in different management positions, we've come to this organizational chart. The diagram 4.1 depicts all required departments and their teams as well as management positions. Division are marked with the same color. The color's saturation denotes the hierarchical position within said department.

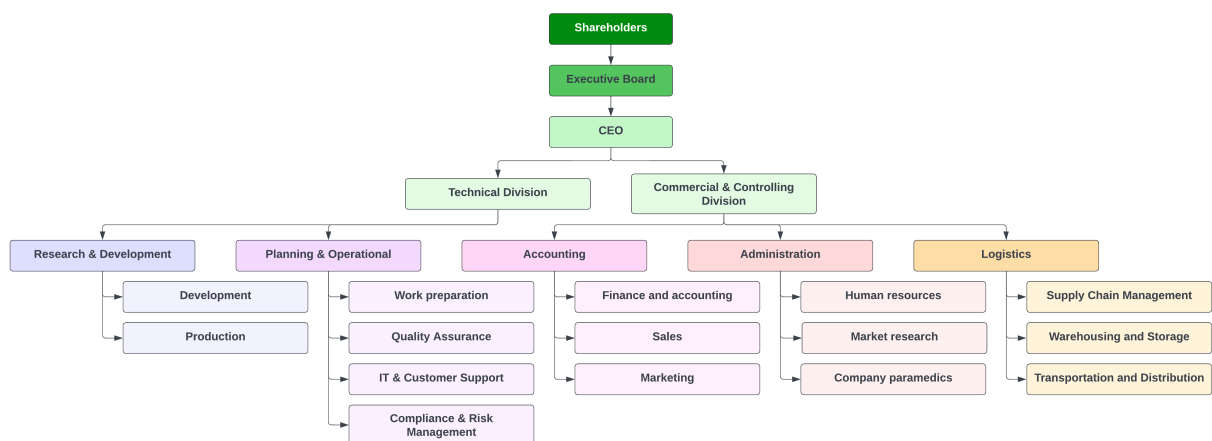


Figure 4.1.: Diagram of the organization

This diagram might be more detailed or complex when compared to ones from different startups, but this is by design. It is important that our service works reliably and follows industry standards. To achieve that, we structurally trade a bit of agility for reliability and structure.

Not displayed are ways or means of communication between teams and/or departments. Also, in the future there might be an additional team, which's job is to ignore department barriers and work on different tasks or enable better communication or a better work flow, depending on the workload of a department.

The following chapters 4.1.1 through 4.1.6 will now go into further detail on what each department entails and of what teams it is made of.

4.1.1. Management

The management division is marked with the color green. This diagram also includes the shareholders and the executive board. This was done in order to paint a complete picture about the company and how has a say in key decisions.

Shareholders want to maximize their profit. Keeping them safe and happy is detrimental to the long term success of the company.

The executive board's and the CEO's job is to lead the company to success and thus growth and profitability. They, especially the CEO, have the big picture in mind and guide the departments to said goals. He has a say in both the "Technical Division" and the "Commercial & Controlling Division".

If uncertainties arise, consulting is also an option to get an external perspective.

4.1.2. Research & Development

This department is marked with the color indigo.

By choice, we've structured this technical department into two teams. Both are concerned with "Research & Development", but one focuses on software while the other focuses on hardware. It's detrimental to us, that both hard and software is done in-house. Having the software team in-house instead of offshore increases the quality, general understanding and agility of our software. Also having hardware in-house enables these teams to work closely together, which further increases the products (and thus also the services) quality and may also lead to a better work environment, as employees are enabled to innovate and take ownership of their own work. [11]

4.1.3. Planning & Operational

The "Planning & Operational" department, marked with violet, is made of a less specialized workforce, which focuses on supporting other departments, customers or general processes.

4.1.4. Accounting

The accounting department is featured with a fuchsia color. It encapsulates a general sales and a marketing team. These are separated and under the same department by design. Their work may be

different, but they need to cooperate with each other frequently, which would be harder if they were in different departments. Additionally, the "Finance and accounting" team is also under this department. It handles all monetary things.

4.1.5. Administration

The red administration department features a classical "Human resources" team, as well as internal paramedics and the "Market research" team. The last one is concerned with the development of the overall market we operate in and how we maneuver in it. It's findings are detrimental, reported to the CEO, which in turn influences the roadmap of the (TODO: acronym) R&D department.

4.1.6. Logistics

Lastly the logistics department marked with orange. The decision to produce both soft- and hardware in-house requires a bigger logistical effort than if it was done offshore. One team will overlook the supply chain, so that if a global supply bottleneck occurs, we're going to be the least impacted as possible. Two other teams are concerned with warehousing of material while another looks after transportation of goods.

4.2. Vision

4.3. Mission

4.4. Contributions to sustainability

4.5. Objectives of services

CHAPTER 5

MARKET SITUATION

5.1. PESTEL

Factors	Description	Impact	Recommendations
Political	Promotion of drone technology, data security and privacy, liability issues	Favorable conditions for drone use, but also challenges due to compliance with complex regulations	Collaboration with policy-makers and authorities, development of transparent data protection concepts
Economic	Cost saving potential, market expansion, competition	Increasing market potential, but also strong competition	Development of a clear business model focusing on cost efficiency and unique selling points
Social	Acceptance of drone technology, privacy concerns, ethical concerns	High acceptance in metropolitan areas, but also privacy concerns and ethical questions	Transparent communication about the benefits of the technology and consideration of ethical aspects
Technological	Rapid development of drone technology, integration of drones into existing systems, development of new applications	Improved drone performance, but also challenges in integrating into existing systems	Investment in research and development, building partnerships with healthcare partners

Factors	Description	Impact	Recommendations
Ecological	Sustainability of drone technology, development of environmentally friendly drones, regulations for environmental protection	Increasing pressure to develop environmentally friendly solutions	Use of environmentally friendly drone technology and flight operations, compliance with environmental regulations
Legal	Airspace law, data protection law, liability law	Strict regulations in airspace and data protection, unclear liability situation	Compliance with airspace and data protection regulations, taking out insurance to minimize liability risks

5.2. Market description

5.2.1. Overview

The drone delivery service market in healthcare is experiencing rapid growth globally, driven by advancements in drone technology, increasing demand for faster medical deliveries, and rising healthcare costs [6]. This market specifically focuses on utilizing drones for the transportation of medical supplies, including:

- Medications and pharmaceuticals
- Blood products and samples
- Medical equipment and devices
- Vaccines and emergency supplies

The target market for this service includes:

- Hospitals and clinics
- Pharmacies and laboratories
- Blood banks and organ donation organizations
- Remote and underserved communities

5.2.2. Trends

Technological advancements: Increased drone range, payload capacity, and autonomous navigation capabilities are enhancing the feasibility and efficiency of drone deliveries. [6]

Regulatory environment: Governments in Switzerland and the European Union are actively shaping regulations to promote safe and responsible drone use in healthcare. [6]

Growing demand for faster deliveries: Hospitals and patients are demanding quicker access to critical medical supplies, which drone delivery can address. [6]

Cost-saving potential: Drone deliveries can reduce transportation costs associated with traditional methods like ground vehicles. [6]

Focus on urban areas: Densely populated metropolitan areas with complex traffic systems stand to benefit most from drone deliveries in terms of speed and efficiency. [6]

5.2.3. Challenges

Air traffic management: Integrating drones into existing air traffic poses challenges due to safety concerns and regulations. [6]

Privacy and security: Ensuring the secure and compliant transportation of sensitive medical information requires robust data security protocols. [6]

Public perception: Concerns regarding noise pollution, privacy intrusion, and safety of drone operations need to be addressed. [6]

Weather dependency: Drone deliveries can be hampered by adverse weather conditions, limiting their reliability. [6]

Limited payload capacity: Current drone technology has limitations on weight and size of cargo, restricting the type and quantity of medical supplies that can be delivered. [6]

Competitive Landscape: The drone delivery service market in healthcare is a developing landscape with several emerging players. Competition is expected to intensify as established logistics companies and healthcare providers invest in drone technology. [6]

5.2.4. Market Opportunities

Partnerships with healthcare institutions: Collaborating with hospitals, clinics, and pharmacies to establish dedicated drone delivery networks. [6]

Expansion into new applications: Exploring the use of drones for emergency medical services, transporting blood products, and delivering vaccines to remote areas. [6]

Focus on environmental sustainability: Developing and utilizing eco-friendly drone technology to minimize environmental impact. [6]

Public education and outreach: Addressing public concerns about drone use to build trust and acceptance. [6]

5.2.5. Conclusion

The drone delivery service market in healthcare holds significant potential for revolutionizing medical logistics in Switzerland and European metropolitan areas. By overcoming challenges and capitalizing on emerging opportunities, companies can contribute to faster, more efficient, and cost-effective delivery of critical medical supplies, ultimately improving patient care.

5.3. Persona description

5.4. Competitor analysis

5.4.1. Identifying Competitors

The drone delivery service market in healthcare is a dynamic space with a mix of established players and emerging startups. Here's a framework to identify your key competitors:

- **Direct Competitors:** Companies offering drone delivery services specifically for medical supplies in Switzerland and European metropolitan areas.
- **Indirect Competitors:** Traditional medical logistics providers (ground and air), courier services offering medical delivery options, and other emerging drone delivery companies targeting non-medical applications.

5.4.2. Competitive Analysis Framework

Analyze competitors across these key dimensions to understand their strengths, weaknesses, opportunities, and threats (SWOT):

- **Company Background:** Size, experience, financial resources, brand reputation.
- **Service Offerings:** Range of medical supplies delivered, delivery area coverage, pricing models, integration capabilities with healthcare systems.
- **Technological Capabilities:** Drone technology used, range, payload capacity, automation features, safety protocols.
- **Regulatory Compliance:** Track record of adhering to airspace regulations and data security standards in Switzerland and the EU.
- **Market Presence:** Existing partnerships with healthcare institutions, market share in specific regions.
- **Competitive Advantages:** Unique selling points, innovative approaches, focus on specific medical delivery niches.

5.4.3. Potential Competitors

Zipline: US-based company with experience in drone delivery for medical supplies in Africa, exploring expansion into Europe. [12]

Matternet: Swiss company with a focus on long-range drone delivery solutions, partnering with healthcare institutions for pilot programs. [9]

UPS Flight Forward: Logistics giant UPS' drone delivery subsidiary, exploring various applications including medical deliveries. [10]

DHL Parcelcopter: Logistics giant DHL's drone delivery arm, conducting trials for medical deliveries in select European countries. [4]

5.4.4. Analyzing Competitive Advantage

Focus on unique selling points: Do we offer faster delivery times, specialize in specific medical supplies, or have a robust safety record?

Highlight technological edge: Do we have superior drone technology, better payload capacity, or advanced flight automation features?

Emphasize partnerships and market knowledge: Do you have established partnerships with key healthcare institutions or a deeper understanding of the needs of the European healthcare market?

5.4.5. Conclusion

By understanding our competitors' strengths and weaknesses, we can develop strategies to differentiate ourselves and gain a competitive edge. Focus on our unique capabilities, build strong partnerships, and stay ahead of the curve in terms of technology and regulatory compliance to be a successful player in the European drone delivery service market for healthcare.

5.5. Market outlook

The drone delivery service market in healthcare for Switzerland and European metropolitan areas presents a promising outlook with significant growth potential driven by several factors:

5.5.1. Growth Drivers

Technological advancements: Continued improvements in drone range, payload capacity, automation, and bad weather flying capabilities will enhance the feasibility and efficiency of drone deliveries. [6]

Regulatory environment: A supportive regulatory landscape in Switzerland and the EU, with clear guidelines for safe and responsible drone use in healthcare, will unlock further market growth. [6]

Rising healthcare demand: Increasing pressure on healthcare systems to reduce costs and improve access to care will fuel demand for faster and more efficient delivery of medical supplies. [6]

Aging population and chronic disease management: The growing elderly population and rise in chronic diseases will necessitate faster delivery of medications and other medical supplies. [6]

Urbanization and traffic congestion: Densely populated cities with complex traffic systems stand to benefit most from drone deliveries, offering a quicker and more reliable alternative to traditional methods. [6]

5.5.2. Market Forecasts

Market research predicts a significant growth trajectory for the drone delivery service market in healthcare. Here are some **projections to consider**:

- **Global Market Insights:** Estimates the global medical drone delivery services market to exceed USD 200 million in 2022 and grow at a CAGR (Compound Annual Growth Rate) of over 25% through 2032. [6]
- **Fortune Business Insights:** Projects the global medical drone market size to reach USD 3.62 billion by 2030, with a CAGR of 16.4%. [6]

Regional Considerations

Switzerland and the EU are expected to be at the forefront of drone delivery adoption in healthcare due to their supportive regulatory environments and advanced technological infrastructure. [6]

Metropolitan areas within these regions will likely see the fastest growth due to factors like high population density, complex traffic systems, and a concentration of major hospitals and healthcare institutions. [6]

5.5.3. Challenges and Uncertainties

Public perception: Addressing concerns about noise pollution, privacy, and safety of drone operations will be crucial for wider public acceptance. [6]

Weather dependency: While technology is improving, drone deliveries can still be hampered by adverse weather conditions. [6]

Data security and privacy: Maintaining robust data security protocols is essential for ensuring the safe and compliant transportation of sensitive medical information. [6]

Integration with existing systems: Seamless integration of drone deliveries with existing hospital logistics and inventory management systems remains a challenge. [6]

5.5.4. Conclusion

Overall, the drone delivery service market in healthcare for Switzerland and European metropolitan areas presents a promising future. By overcoming challenges, capitalizing on technological advancements, and building trust with the public and healthcare institutions, companies can play a significant role in revolutionizing medical logistics and improving patient care.

5.6. Market regulations

The drone delivery service market in healthcare operates within a framework of regulations established by both Switzerland and the European Union. Here's a breakdown of the key regulatory considerations:

5.6.1. European Union (EU) Regulations

EU Drone Regulation (2019/947): This overarching regulation sets the foundation for safe and secure drone operations across the EU. It categorizes drones based on weight and risk, with specific requirements for each category. [2]

Open Category (C0): Low-risk drones under 250 grams generally require minimal registration and pose minimal risk to healthcare deliveries. Medications typically wouldn't fall into this category.

Specific Category (C1, C2, C3): Drones exceeding 250 grams or posing a higher risk fall under this category. They require operator registration, authorization for specific operations, and adherence to safety measures like maintaining a visual line of sight (VLOS). This category would likely be most relevant for healthcare deliveries.

Certified Category (C4): High-risk operations beyond visual line of sight or involving transporting dangerous goods require extensive certification and authorization. Not applicable for most healthcare deliveries.

EASA (European Union Aviation Safety Agency) Guidelines: EASA provides specific guidance for drone operations in the EU, including:

- **UTM (Unmanned Traffic Management) Systems:** These systems manage drone traffic in designated airspace, ensuring safe integration with manned aviation.
- **Standard Scenarios (STS):** These pre-defined scenarios outline safe operating conditions for specific drone operations, potentially including medical deliveries in the future. [2]

5.6.2. Swiss Regulations

FOCA (Federal Office of Civil Aviation): FOCA enforces EU Drone Regulation within Switzerland and may have additional national regulations specific to drone operations. It's crucial to stay updated on any Swiss-specific requirements.

Bazl (Federal Office for Civil Aviation): Bazl provides information and resources for drone operators in Switzerland, including registration procedures and airspace restrictions.

5.6.3. Additional Considerations

Data Protection: Both the EU (GDPR - General Data Protection Regulation) and Switzerland have strict data protection regulations. Companies must ensure all medical information transported via drones is handled securely and compliantly.

Privacy: Public concerns regarding privacy intrusion from drone deliveries need to be addressed. Transparency regarding data collection and usage is essential.

Insurance: Liability insurance covering potential accidents or damage caused by drones during healthcare deliveries is crucial.

5.6.4. Conclusion

Regulations for drone operations are constantly evolving. It's essential to stay informed about the latest updates from the EU and Swiss authorities to ensure your healthcare drone delivery service operates compliantly.

CHAPTER 6

STRATEGY

6.1. Stakeholders

6.1.1. Internal

6.1.2. External

6.2. SWOT-analysis

6.3. STP Process

6.4. How we reach our goals

6.5. Possible barriers of entry

CHAPTER 7

FINANCIAL PLAN

Part III.

Future

CHAPTER 8

OUTLOOK

For our future outlook, the first thing we have to do is to evaluate our current data. We will have to gather some qualitative and quantitative data about the business finances, operations, products or services, customers, and employees. With this newly acquired information, we can find out where our strengths and weaknesses are. It's really important to know soon enough what works in our business and what doesn't. We will talk to our current customers and ask them about their opinions about the drones and the service. Ideally, with a survey we will find out, how we can optimize our drones and how we can improve the service and communication between our customers and us. In the future, we want to expand our offerings. Through the information we gathered, we can optimize our drones and the service. When the drones established themselves in the planned cities and everything works out as it was predicted, we also intend to expand our business to different places. If the circumstances allow it, our concept could also be established in smaller and poorer cities. For this we would have to adjust our prices for the drones, because poorer cities can't afford to pay as much as big, pharma oriented cities. A possibility would also be to create a new kind of drone, which is able to transport heavier load. With this we could transport a larger variety of samples and also more samples in one transport. This leads to more efficiency and a greater variety of our service.

Before we offer new services or a new kind of drone, we will have to do some further market research. We will have to find out what is popular on the market and where the gaps in the market are. Drone transportation is a relatively new market concept, so theoretically there are still many options open to us. Of course, you have to bear in mind that there could be new competitors in this market at any time which offer a similar service to us. However, our aim is to remain in the pharmaceutical industry and the health sector to focus on the transportation of medical samples. With this specific focus, we want to dominate the drone transportation market by guaranteeing the highest possible transport quality.

An important fact for the future of our business are also the finances. We also have to take a closer look at the income and expenditure. In order to provide our service in poorer cities, we will have to

optimize our income and expenses. By optimizing the expenses for our business, we will be able to save more money. By minimizing the production costs of the drones, we could save the most money. The best way to save on production costs is to look at where the production would be the cheapest in relation to quality. The quality of the drones is our top priority, so we won't produce them with any cheap material. This is because poor quality drones could endanger the transport of critical samples. In order to continue financing our business, we will also be looking for further investors. To achieve this, we will expand our network and spread our ideas further. The most suitable partners would of course be large pharmaceutical companies or hospitals that show interest in our service and would like to be a part of it. This could also improve future cooperation between the two industries. If we expand our business, we will also have to hire new employees in order to guarantee the best possible service.

With all these mentioned factors, we will be able to grow and expand our business. We hope that this type of transport will become established worldwide in the future and that it will speed up the transportation of medical samples, which could save many patient's lives. We look forward to being a part of it.

Part IV.

Appendix

APPENDIX **A**

LIST OF ACRONYMS

APPENDIX **B**

GLOSSARY

Expression	Explanation

APPENDIX C

LIST OF FIGURES

4.1	Organizational chart made with lucidchart.com	8
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APPENDIX D

LIST OF SOURCES

Temp for fabians sources to be listed

// TODO: remove unused references

- [1] Proton AG. *General Data Protection Regulation (GDPR) Compliance Guidelines*. GDPR.eu. 2019. URL: <https://gdpr.eu/> (visited on 03/18/2024).
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