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<u>Διπλωματική Εργασία</u>

BUSINESS PLAN FOR ESTABLISHING AN UNMANNED AERIAL VEHICLE (UAV/DRONES) SERVICES ENTERPRISE IN CYPRUS.

του

ΚΩΝΣΤΑΝΤΙΝΟΥ ΙΩΑΝΝΗ ΣΜΑΓΑ

Υποβλήθηκε ως απαιτούμενο για την απόκτηση του μεταπτυχιακού

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ABSTRACT

Unmanned Aerial Vehicles (UAVs) or “drones” have been receiving a lot of attention as an emerging and high potential industry. Even though drones were mostly used for defence purposes there seems to be a clear indication that the development of small and cost effective drones has led to a range of applications that socioeconomic factors are starting to employ to reduce risk, optimize processes and production lines and create new chains of customer and societal value. However, according to market research it is difficult to anticipate and measure the full range and financial impact of commercial drone related product and services.

This thesis attempts to respond to the question whether establishing a UAV services provision business in Nicosia, Cyprus meeting the demands of the local and regional market for aerial data is profitable and sustainable. To answer this challenging questions and before establishing a hypothesis, a thorough literature review of the business planning process in worldwide literate as a method is performed to obtain a better understanding on its strengths and limitations. Then, the current state and prospects of the drone industry is presented, and the regional market in Cyprus is analysed and segmented gathering data from existing market reports, journals as well as limited semi-structured interviews of stakeholders.

Finally, a financial plan is prepared to substantiate the hypothesis that indeed establishing a UAV services business in Cyprus, addressing the needs of a wide range of professionals, can be profitable and have promising prospects for future growth as technology matures and societal acceptance grows.

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1 INTRODUCTION

Unmanned Aerial Vehicles (UAVs) or “drones” have been receiving a lot of attention as an emerging and high potential industry. Even though drones were mostly used for defence purposes there seems to be a clear indication that the development of small and cost effective drones has led to a range of applications that socioeconomic factors are starting to employ to reduce risk, optimize processes and create new chains of customer and societal value.

In the US only, the commercial drone industry within the last 5 years has evolved into a more than 2.5 billion-dollar industry with projections of a 19% compound annual growth rate, while applications of military drones are expected to grow of 5% per year (Business Insider 2015). Long term projections try to assess the real market value of drone related activities until 2035 and 2050 all underline that it is a rapidly growing and promising market to invest.

However, according to market research conducted by governmental and private research institutions it is difficult to anticipate and measure the full range and exact financial impact of commercial drone related product and services. This fact becomes more challenging when individuals wish to enter this emerging but uncharted market, obtain knowhow, purchase equipment and establish a business innovative services related to aerial data captured by drones.

The main driver of this thesis is to investigate whether establishing a UAV services provision business in Nicosia, Cyprus meeting the demands of the local and regional market for aerial data is profitable and sustainable. In order to do so, a business plan for establishing an unmanned aerial vehicle (UAV/drones) services enterprise in Nicosia Cyprus is drafted with the following objectives:

- Establish a thorough understanding of the strengths and limitations of the business planning process as a decision making tool for initiating a business or apply for funding
- Establish a clear business vision and mission of the company and the proposed offering

- Conduct a holistic industry and market research and draft a targeted marketing plan
- Present a profitability and sustainability estimation for new business

The analysis that follows uses data from existing market reports and technology assessments on the industry, academic articles and magazine insights, as well as limited number of semi-structured interviews of stakeholders that are related to the scientific and professional field of drone related services.

2 LITERATURE REVIEW

2.1 Objectives of literature review

The present attempt to map and analyse the theoretical framework of the business plan within this thesis draws evidence from literature as well as empirical research regarding the dynamics, processes, and tools and determining factors of establishing a new business. The theoretical design has the ultimate objective to present and consider approaches that perceive business planning as an integral part of the start-up process as well as bring to surface approaches that deeply criticize traditional business planning under future concept based assumptions.

Through scrutinizing existing studies the author hopes to obtain a thorough understanding on the determinant factors of a successful business planning process and establish a realistic theoretical framework on which to build the business plan that will follow.

2.2 Strengths and limitations of business planning in business performance

Business planning can be defined as the processes of gathering and analysing information, evaluating required tasks, identifying risks and strategy, projecting financial developments, and documenting these things in a written plan (Castrogiovanni,1996; Sexton and Bowman-Upton, 1991: (Delmar & Shane, 2003).

The underlying logic behind drafting business plan is to try to predict the future of a newly established company or idea by applying marketing, strategy, financial research and planning tools integrating a huge amount of information.

A business plan can have multiple uses. Primarily it serves as a decision making tool providing structured analytical information on positive and negative aspects of different alternatives. Kraus et al (2008) have argued that the more strategic instruments are used, such as the SWOT analysis, the Porter's five forces model, the business model canvas, gap analysis or balanced scorecard, the more successful a firm might perform, indicating that formalized strategic planning might very well contribute to performance in SMEs (Kraus, Harms, & Schwarz, 2008).

Despite the wide acceptance and use of the business plan as a tool for starting a business, a serious research gap exists regarding why new organizations write business plans, and what consequences result from them (Castrogiovanni, 1996). Investigating and filling this gap in literature becomes more urgent as writing a business plan is probably the most widely used teaching tool in entrepreneurship education and professional training (Lange, Mollov, Pearlmutter, Singh, & Bygrave, 2007).

Advocates of the business planning process argue that a good business plan begins with answering fundamental questions that deal with the nature of the business opportunity itself. Moreover, addressing questions such as whether the target market is large or rapidly growing or both as well as determining the structural attractiveness of the industry is key to determine how feasible is to get a market share and generate profit (Sahlman, 1997). In the influential study by Delmar and Shane (2003) examining data from 223 new ventures initiated in Sweden in 1998, they argue that business planning can be more effective as a tool during the establishment of a new business than during the upkeep of an existing business. In addition they concluded that business planning is indeed a valuable activity, even in conditions of uncertainty that accompany a firm's formation. (Delmar & Shane, 2003). After all, as Armstrong (1982) notes "Formal planning seems valuable for strategic decision making because so much money is spent on it" (Armstrong, 1982). Barrow et al (2001) underline, "perhaps the most important step in launching any new venture or expanding an existing one is the construction of a business plan" Moreover they note that "…the decision by the prospective funder whether to proceed beyond the initial reading of the business plan to consider the proposal in more detail will therefore depend on the quality of the business plan used to support the funding proposal" (Mason & Stark, 2004).

On the other hand, Honig and Karlsson, argue that when it comes to satisfy institutional pressure, such as responding to funding call, resorting to business planning can be considered to be one of the most widely regarded aspects of pre-start up planning (Honig & Karlsson, 2004). Entrepreneurs seem to interpret external demands by writing business plans as part of a symbolic act to gain legitimacy for their actions (Karlsson and Honig, 2009). As a tool to convince possible investors, business plans are widely spread among new businesses, and they have gained considerable support by educational programs, universities, governmental assistance agencies, management consultants and a wide array of literature (Karlsson and Honig, 2009). Business planning is often taken for granted as a key tool that should be updated and used in a frequent basis. However, entrepreneurs who wrote business plans never updated or rarely referred to their plans after writing them (Karlsson and Honig, 2009).

Business planning for start-ups, especially when conducting negotiations with possible investors has to go hand in hand with presenting the existence of a capable and commitment management team. According to Rea (1989) "A business plan in which too many things could go wrong and a team perceived by venture capitalists as marginal are a sure formula for failure, even when there are strong market opportunities" (Rea, 1989). Similarly, Mason and Start (2004) argue different types of funders, such as bankers, Venture Capital Funds Managers (VFCMs) and Business Angels (BAs), are interested in different types of information in a business plan and subsequently have different expectations about what information a business plan should contain leading them sometimes to different interpretations (Mason & Stark, 2004). They argue that is normal practice for bankers to compare the financial information in a business plan against how industry performs on an average. All essential deviations should therefore be thoroughly explained. On the other hand, CFMs and BAs stress less importance to financial information as growth potential and returns are their main concerns. Therefore, they are much more focused on the size of the market, future growth and the nature of competition, considering also customer need and satisfaction as key. (Looser & Schläpfer, 2001): in (Mason & Stark, 2004).

2.3 Theoretical concept and hypothesis

From the analysis above it has been clear that there is no unified stance in literature towards whether conducting a formalized business planning process is linked to more successful business performance. Some scholars question even the need for a business plan at the first place as they stress that entrepreneurs should spent less time in planning and more time in actually implementing important aspects of their business (Karlsson & Honig, 2009). When conducting a business plan, entrepreneurs should be aware of a huge range of factors that have to do with who is the audience of the business plan, who is requesting the business plan and the socioeconomic conditions and institutional forces behind every call and primarily the scale and size of the planned activities.

The business plan that will be presented in this paper, drawing models and tools from a wide range of resources will make use of and consider the theoretical advances regarding the benefits of formal planning in business. The analysis that will follow will analyse extensively the following 4 important pillars regarding the proposed enterprise:

- Provide a business summary resenting the product, services, management and the people behind the endeavour
- Conduct a holistic market analysis including explaining demand and supply dynamics and presenting a Strengths Weaknesses Opportunities and Threats (SWOT) analysis
- Draft a comprehensive strategy and implementation analysis
- Provide a realistic financial plan

Hypothesis: By using the theoretical apparatus presented above the hypothesis is formulated that there is strong indication that launching an unmanned aerial vehicle (UAV/drone) photography enterprise in Cyprus targeting the needs of a wide range of professional is clearly profitable, sustainable and has very good prospects for growth.

3 METHODOLOGY

3.1 Data collection and analysis

The methodology deployed to accept or deny the thesis hypothesis has been primarily qualitative and was based on a mix research design with the following:

- Analysis of journal articles regarding drafting a business plan for start-ups and launching a business
- Analysis of scientific journals, regarding state of the art in services and applications regarding use of UAVs
- Analysis of interviews, case studies, market reports regarding the current status and future prospects of the drone economy
- Semi-structured telephone interviews on a set of same questions to be answered by all interviewees. Additional questions were asked during interviews to clarify and/or further expand certain issues with the following stakeholders:
    - Company founder as interested party to invest (background: Surveying engineer)
    - Cartographer and possible employee of the new business (background: GIS specialist/cartographer
    - Academic expert in services and applications related but not limited to the use of raw data from commercial UAVs (Background: Assistant professor in geo-informatics)
    - Amateur operator of low cost UAV.

Interviews were conducted by telephone on a set of questions regarding currents uses for drones, technology prospects, cost structure and pricing, local market potential.

3.2 Methodology limitations

It must be acknowledged that due to the small sample and nature of interviews, as semi-structured, the author recognises that a certain degree of bias might be present. Desk research of academic journals, interviews, case studies, market reports tried to enrich identified themes, patterns and relationships through the interviews

4 BUSINESS PLAN ANALYSIS

4.1 Executive summary

NO-GRAVITY LLC will be a newly established enterprise based in Nicosia Cyprus. The company will offer aerial video and photography complementary services to a wide range of professionals enabling them to:

- minimize their operational costs,
- increasing the quality of their products and services by obtaining better precision and measurement accuracy
- create new and add value to existing services and products

NO-GRAVITY's goal is to support its clients and partners in the responsible and successful completion of projects bridging innovative technological solutions and market needs using UAVs (drone) related technology.

The proposed services to be offered include:

- Smart surveying and 3D modelling using UAVs on a wide range of applications including:
    - Real estate estimation
    - Agricultural monitoring
    - Terrestrial & Marine constructions
    - Surveillance of industrial sites
    - Energy investment plans
- Generating multimedia and educational content with UAVs
- Provision of raw aerial photography data on demand for general use
- Supporting the public and private sector into transforming ideas into projects related to socioeconomic applications with the use of UAVs

The use of UAVs for a series of applications, including tourism, energy, environmental monitoring and constructions is an emerging market in Cyprus and its prospect is connected to the growth of the overall economy of the island.

4.2 Business summary of NO-GRAVITY LLC

4.2.1 Company description

The overall idea behind the creation of the company originates in the emerging need of the local market for customized solutions for the industry and public services using UAVs. Even though the use of UAVs in professions such as engineering, surveying and surveillance is not new, it is still considered to be a growing trend in Cyprus and the southeast Europe with high potential in various applications spanning from constructions and environmental monitoring to energy and border control.

The company's founder being a surveying engineer himself working for several years in the provision of geo-informatics & IT services, conceived and put forward in January 2017 the idea of a new company offering customized services using data generated by medium and small UAVs and commercial drones.

4.2.2 Legal form, intellectual property rights and patents

NO-GRAVITY will be established as a Cyprus Private Limited Liability (LLC). According to the portal Investopedia an LLC is a hybrid business entity that shares communalities of both a corporation and a partnership as well as sole proprietorship. The limited liability feature is similar to that of a corporation, while the availability of flow-through taxation to the members of an LLC resembles more of partnerships. LLCs however are more flexible than a corporation, and are a good match for companies with a single owner. Specifically the status and benefits for establishing a Cyprus Private Limited Liability Company are presented in the table below.

Table 1: Advantages of Cyprus Private Limited Liability (LLC)

General status for establishing Cyprus Private Limited Liability (LLC)
• The language for all official documents is Greek and English • There is availability for a shelf company availability • Time needed to establish a new company does not exceed 3 days • Application of EU Savings and Tax Directive • Has a corporate taxation of 12.5% which is the Lowest in the EU.

• There is 0% profit on sale of shares and securities • There is 0% investments income from dividend • There is 0% tax on dividends for foreign beneficial owners • There is 0% tax on capital gains tax(except with respect to Real Estate situated in Cyprus) • Registration to VAT is possible • Invoices from offshore companies are accepted • There is access to double taxation (treaties with over 40 countries)
Share capital or equivalent
• Standard currency: Euro • Permitted currencies: Any • Minimum issued: €1,000 • Usual authorized: €1,000

According to the annual reports issued by Deloitte (2017) and PricewaterhouseCoopers (2017) the taxation on profits of all Cypriot companies is at the rate of 12.5%, which currently is perceived among the lowest in Europe and is not considered as not offshore. With proper tax structuring, much lower effective tax rates can be achieved. The tax system is fully EU and OECD compliant and there is no withholding of tax on dividends

The company will retain fully the intellectual property rights (IPRs) from applications, services and business models developed previously by its owner working as an independent surveyor. In addition it will hold the IPRs from work corresponding to its tasks in the framework of future research projects. The company is expected to have no dependencies in terms of Intellectual Property Rights from participation of its owner in previous projects. This fact allows for full exploitation of existing IPRs (licencing & selling) and guarantees that NO-GRAVITY will benefit from sales of products and services developed in the framework of joint R&D projects.

4.2.3 Core values and mission statement

The core idea underpinning the creation of NO-GRAVITY is the need to provide innovative services using UAVs and state of the art 3D modelling techniques to the service sector in Cyprus for a wide range of applications. Due to the educational and professional background of its founder who has a genuine interest in new technologies and bringing the gap between research and market, NO-GRAVITY has been established aiming at:

- Providing quality services in a transparent and fair way
- Being at the forefront and drive technological change internally and within the local industry
- Build a positive team and family spirit
- Pursue sustainable growth and learning

4.2.4 People

4.2.4.1 Management structure

The current management structure is comprised by the founder as director of the company:

- Director & founder, shareholder (100%) of NO-GRAVITY LLC – Gender: Male

The company will follow a flat hierarchy's organizations structure with no levels of middle management.

4.2.4.2 Proposed team and qualifications

Within the section below a detailed analysis of the existing and desired skills for the proposed personnel will be presented. The analysis and requirements presented in the table below regarding the new positions that will be created are based on state of the art human resources literature regarding the requirements of a UAV applications company as well as requirements set by the founder during the interviews. In addition according the SESAR report (2016) most UAV services start-ups are comprised by 1 to 8 people according to the scope and market size. For the purposes of satisfying the local and regional market needs the company is expected to have 4 employees for the first 5 years of operations.

The tables below provide a detailed analysis on the existing and desired positions.

Table 2: Existing team

Position	Status	Qualifications
Director & founder, owner	Existing	• Diploma in Surveying Engineer, • Expertise of more than 10 years in image processing, photogrammetry, GIS and 3D Modelling applications.

		• Expertise in UAV handling • Vast involvement in field application projects involving Geo-informatics.
Employee: Cartographer & designer	Existing	• Diploma in Surveying Engineer & Geoinformatics • Expertise in Geographic Information systems (GIS), Cartography, web design, graphics and social networks. • Expertise in in software applications Adobe Photoshop, Adobe illustrator, Adobe InDesign, Joomla, word press, html, ArcGIS.

NO-GRAVITY LLC will publish job vacancies looking for:

- An experienced web and mobile developer with the following qualifications. The candidate should have a university degree preferably in Informatics, Computer Science or related fields. A Master's degree in Informatics or Computer Science will be favourably evaluated.

  Timeframe: The vacancy will be issues in the local media in the first semester of the 2nd year of operation after the launch of the company.

  Annual personnel cost to the company: 16.000 €
- Business development and marketing analyst that will be integrated latter in the production chain and will be responsible for financial, marketing and sales aspects of the company.

  Timeframe: A vacancy will be issued in the local media in the 3rd or the 4th year of operations and according to the current needs.

  Annual personnel cost to the company: 14.000 €

Table 3: Vacancies

Position	Status	Qualifications

IT Consultant / Web developer	Open (Priority High)	Good knowledge of the following is important:
		• Data Management Systems (SQL, MySQL, PostgreSQL etc.)
		• Programming languages:
		  o Web development: HTML5/CSS3, JavaScript, jQuery, PHP, AJAX etc.
		  o JAVA web services
		  o Mobile development: android; experience in design graphical layouts (XML, HTML)
		  o Proficient use of the Greek and English language.
		Knowledge of the following will be highly appreciated:

		• Frameworks: Apache Cordova / Struts2
		• Programming languages:
		  o C/C++/C#
		  o Python
		Mobile development: iOS

Junior Business development and marketing analyst	Open (Priority: Low)	• Diploma in Engineering economics or real estate finance • Master of Business Administration (desired)

4.2.5 Services provided and competitive advantage

The proposed enterprise focuses on delivering innovative services and products using data (images & video) captured with the use of small size, low cost Unmanned Aerial Vehicles (UAVs) commonly referred also as drones. The competitive advantage compared to the local competition however, lies on the technology or equipment planned to be used, but also in the vast expertise and experience of its personnel in previous related projects as well as involvement in research projects.

Innovative technics bringing down the cost.

Through the information obtained by conducting the semi-structured interviews Contrary to traditional surveying and mapping the technology employed by the company will alloy to complete complex technical works in an average 1/5 of the time. Minimizing operational costs for the company will enable for competitive prices in the provided services as well as biggest profit margins**.**

Developing customised solutions to meet customer demand for data.

NO-GRAVITY's personnel has an increased interest in R&D and especially providing customized solutions to cover niche market segments in the engineering and IT sectors. Capitalizing on the strong R&D experience of its personnel and providing exclusively customized services in smart surveying using UAVs is currently not provided by a an enterprise in Cyprus. However the enterprise following the coopetition principle and approach will seek active synergies to share resources and knowledge (Akdoğan & Cingšz, 2012). A strong lever towards market penetration is the multidisciplinary nature of its personnel that will comprise of a mixed team of engineers, IT professionals and project managers.

Strategic alliances and participation in funded R&D projects brings resource sharing and improve quality of services

Making use of a vast network of partnering institutions and especially other SMEs as well as individual relationships forged in previous R&D projects a company is in a position to establish itself very quickly on a regional level (Ismail, Domil, & Isa, 2014). Finally its personnel have a great knowledge of applying into funding schemes such as H2020 and EUREKA[1] as well as national funding programs such as the ESTART 2016-2020[2]which can ensure that new innovative services are added in a sustainable way until it reaches a phase of maturity.

4.2.6 Technology in use and deliverables to customer

In order for the company to deliver high quality technological services and products, state of the art equipment and software will be purchased and more specifically 2 UAVs and the image processing software (standalone licence).

Table 4: Ste of the art hardware & software for a UAV start-up.

Equipment / Use / Cost	Technical Specifications
	**Model:** DJI Phantom 4 PRO3 Drone Quad copter **Main Use:** Mapping, Surveying **Cost:** 1,500 €

[1] https://www.eurostars-eureka.eu/

[2] http://www.research.org.cy/el/restart-2016-2020

[3] https://www.dji.com/phantom-4

	**Model:** Ebee SQ – SenseFly4 **Main Use:** Agriculture and industrial sites monitoring. **Price:** 9,360 €
PIX4D	**Software:** Pix4Dmapper Pro5 **Main Use:** Drone base mapping **Cost:** 6.500 €

Service & Deliverables:

A sample of the output that will be delivered to the clients (deliverables) is presented below. It must be noted that the following example refers to a contract of surveying nature.

[4] https://www.sensefly.com/drones/ebee-sq.html

[5] https://pix4d.com/product/pix4dmapper-pro/

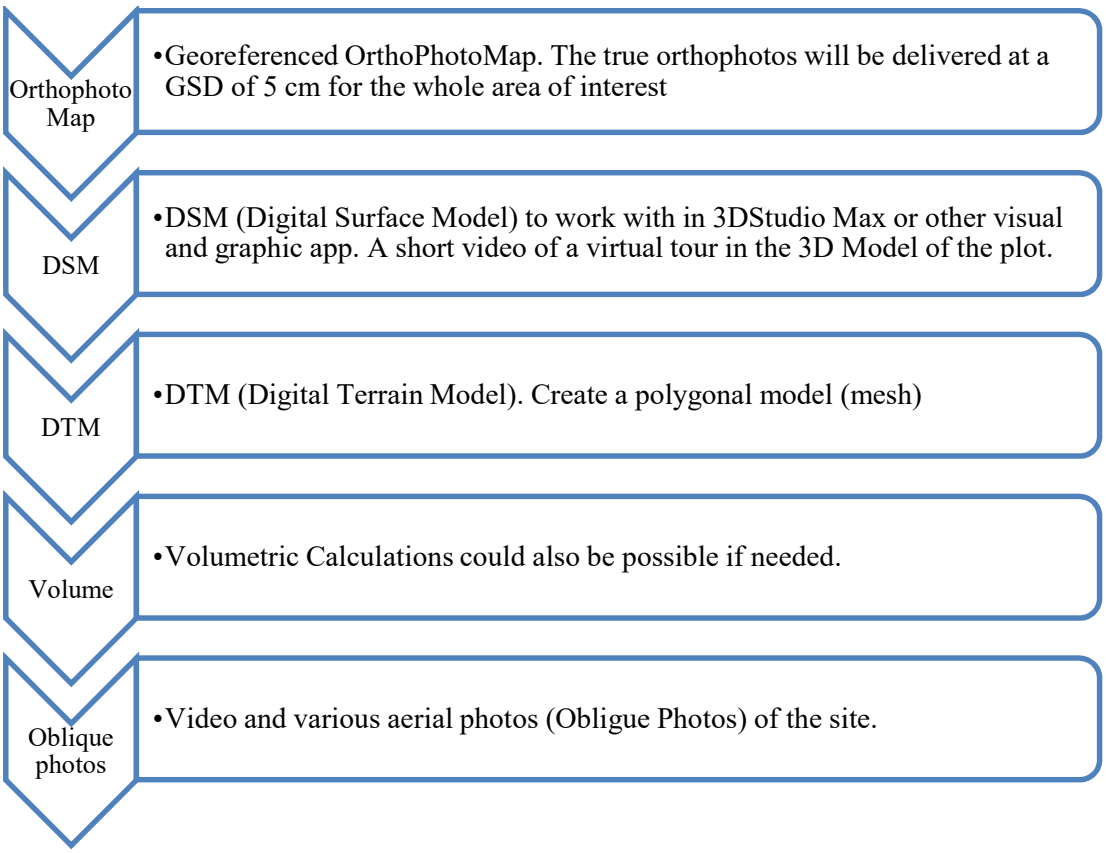
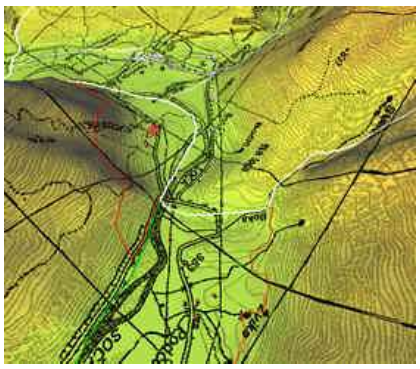


Figure 1: Services & deliverables

The pictures below retrieved by Wikipedia, provide an indication of the digital outputs created as well as possible applications of the generated models.

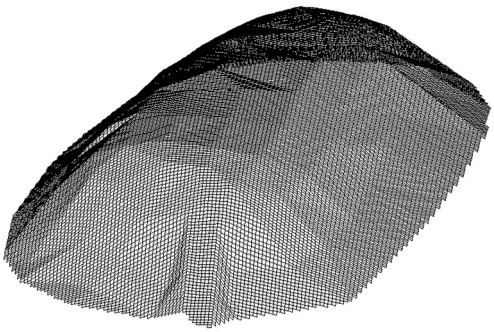
Digital Surface Model[6]



Digital Elevation Model[7]

[6] By Kbosak - Own work, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=14633627

[7] By Dacnoh (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons https://commons.wikimedia.org/w/index.php?curid=678856



Digital Terrain Model[8]

Digital Surface Model[9]

Figure 2: Technological output

4.3 Market research

4.3.1 The challenges of assessing the market potential UAV powered products and services

Remotely piloted or unmanned aviation systems (RPAS/UAS), known as drones, are aerial vehicles that can fly without an on-board pilot. These systems can have varying degrees of autonomy and include human remote pilots who control the vehicle from meters, kilometres or continents away (Boucher, 2015). In the last 5 years, the fast-growing global drone industry and research has invested extensively to open up a new hardware and computing market pushing developments much faster that governmental regulations (Business Insider 2015).

The growing ecosystem of drone software and hardware vendors is already providing services to a huge span of clients such as construction, agriculture, energy and although many of the service providers and manufactures are small start-ups, industrial huge industries are beginning to invest as well (Business Insider 2015). This fast growth of the UAVs industry is catching the interest of big industries who seek to enter the market by mergers and acquisitions (M&A's) of emerging drone companies. It's still uncertain if the current UAV industry landscape will be able to take off to support growing demand

[8] https://upload.wikimedia.org/wikipedia/commons/e/ea/Simple_Digital_terrain_model.gif

[9] By Kbosak-Own work, Public Domain, https://commons.wikimedia.org/w/index.php?curid=12707803

projections and at the same time balance individual narrow interests of those involved in the drone industry while maintaining the potential benefits offered by UAV technologies (Hall & Coyne, 2014, Dyveke Weissbach & Kathryn Tebbe, 2016)

In the US only, the commercial drone industry within the last 5 years has evolved into a more than 2.5 billion-dollar industry with projections of a 19% annual growth rate, while applications of military drones are expected to grow of 5% per year (Business Insider 2015). However, according to market research conducted by governmental and private market research institutions it is difficult to anticipate the full range and financial volume of industrial drone applications for new product and services as well existing services to be replaced by drones.

Long term projections by most market research institutions try to assess the real market value of drone related activities until 2035 and 2050 and all underline that it is a rapidly growing and promising market to invest. (SESAR 2016, PwC 2016, BCG 2017, Goldman Sachs 2017, Business insider 2015).

4.3.2 Market analysis methodology

Due to the fact that the target market for drone related services in Cyprus has not been documented substantially and it is difficult to assess the extent of the current market gap and replacement trend of existing services by drones. The methodology to conduct the market analysis that follows, is based on data and methodologies by industry reports regarding the market potential of drone related activities in the EU and US and trends and statistics on the economy of Cyprus on the sectors connected to the offering of NO-GRAVITY.

A hypothesis is made that by applying projections of global UAV market growth to respective industry sectors in the Cypriot economy a market size and outlook for NO-GRAVITY can be established. An additional hypothesis that drone related services market in Cyprus will continue to grow as the general economy grows is made.

It must be stated that the target market is connected to the applications developed currently. New applications using drones are being invented constantly which mean that the applications areas expand as well.

4.3.3 UAV Industry background and prospects

UAVs have been receiving a lot of attention as an emerging and high potential industry. Even though drones were mostly used for defence purposes there seems to be a clear indication that the development of small and cost effective drones has led to a range of applications that socioeconomic factors including businesses, government and academia are starting to leverage to reduce risk, optimize processes and production lines and create new chains of customer and societal value. Key element to this new potential and industry transformation is the ability to collect strategic data that previously were considered to be unaffordable or simply hard to obtain (SESAR 2016).

According to PwC (2016) in its global report on the commercial applications of drone technology the relevant market value of drone related solutions for 2015 was over $127 bn. This figure takes into account the value of current business services and labour that could be replaced in very near future by drone related solutions

Table 5: Global view of predicted value of drone powered solutions in key industries. Source: PwC 2015

Industry Sector (2015)	($Bn)
Infrastructure	45,2
Agriculture	32,4
Transport	13
Security	10
Media & Entertainment	8,8
Insurance	6,8
Telecommunication	6,3
Mining	4,4
Total	**127**

According to a market report from Tractica[10], commercial drone revenues will reach $12.6 billion by 2025. It is estimated that drone-enabled services will be more than double

[10] https://www.tractica.com/newsroom/press-releases/commercial-drone-shipments-to-surpass-2-6-million-units-annually-by-2025-according-to-tractica/

the revenue from sales of commercial drone hardware units themselves[11]. Detailed data can be obtained by the figures below:

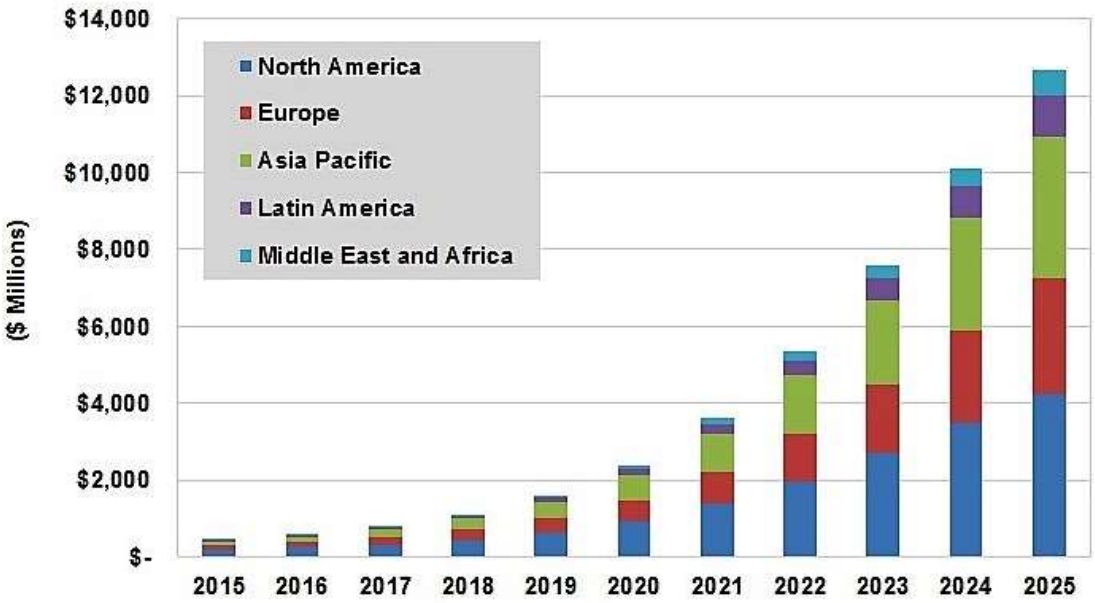


Figure 3: Commercial drone total revenue by region, world markets 2015-2025. Source: Tractica

According to BCG (2017) estimates, by 2050, the industrial drone fleet in Europe and the US together will include more than 1 million units and can generate $50 billion per year in related product and service revenues. BCG also argues that by 2030 a rapid growth in drone fleets is expected followed by steady growth through 2050.

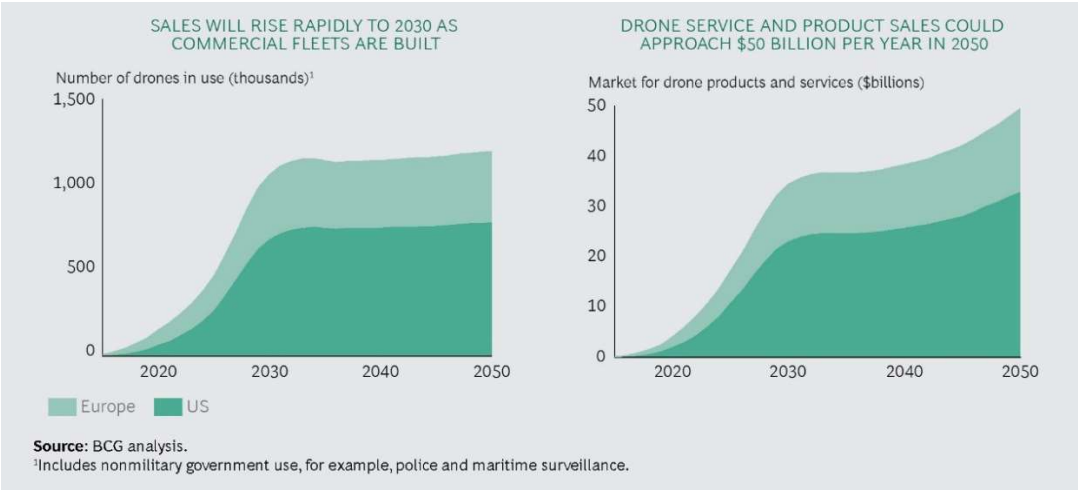


Figure 4: Evolution of drone market by 2050 - Source: BCG 2017

[11] https://www.tractica.com/newsroom/press-releases/commercial-drone-enabled-services-revenue-will-reach-8-7-billion-annually-by-2025/

According to the SESAR report (2016), until 2050 around 7 million leisure drones are expected to be operating across Europe and a fleet of 400. 000 is expected to be used for commercial and government missions.

The development of the commercial UAV industry depends heavily on the ability of drones to operate at very low levels usually below 150 meters in both rural and urban beyond the visual line of sight capabilities (BVLOS) According to the SESAR (2016) report some of the most influential application areas in terms of the potential number of drones and economic impact, include the following:

- **Agriculture:** 100 000 drones are forecasted to enable precision agriculture
- **Energy:** 10 000 inspection drones to limit risk of personnel and infrastructure
- **Delivery:** 100 000 drones to provide transportation of emergency medical supplies and products
- **Safety and security:** 50 000 drones would carry out civil protection and humanitarian missions

4.3.3.1 Value chain for commercial UAV related services in Europe: Drones-As-A-Service concept

According to the analysis made by SESAR (2016) in key demand areas such as agriculture, energy and security, the economic impact analysis of the entire value chain for each of the areas underlines the potential for a European market exceeding EUR 10 billion by 2035 and past EUR 15 billion annually by 2050 (SESAR 2016). Critical to the market analysis related to this thesis is the overwhelming dominance of commercial and governmental value added services that are expected to represent the largest market opportunity in the value chain.

The concept of "Drones-As-A-Service" and the ability to bring drone technologies to a wide range of clients that make use or need aerial data for their daily operations is clients seems to clients seems to gain the biggest market share with over EUR 7,5 billion until 2035 and EUR 10 billion through 2050.

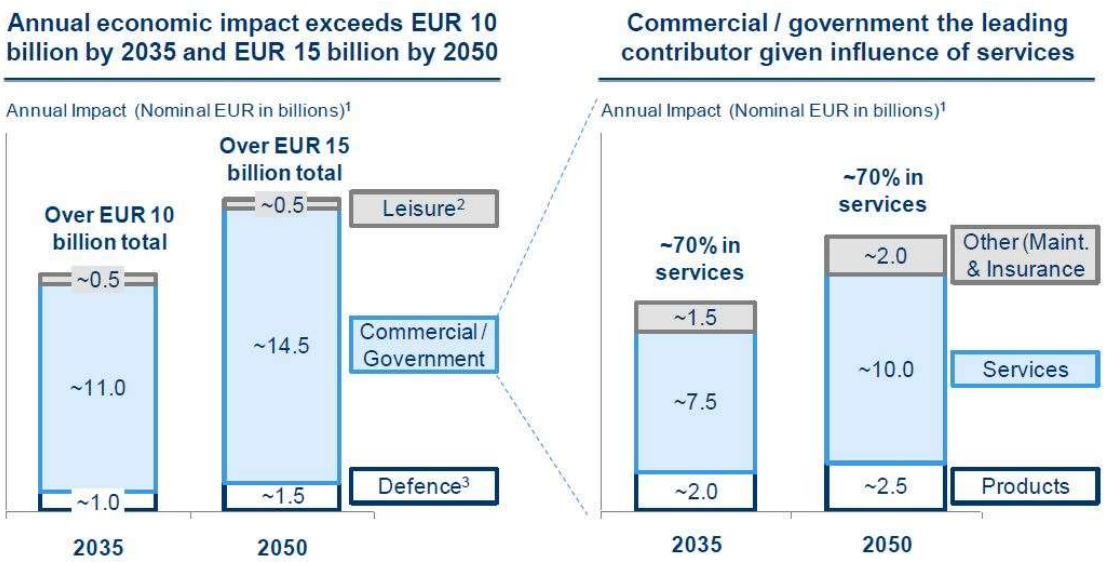


Figure 5: Value at-stake for European demand across entire spectrum - Source: SESAR 2016

In the short term according to the report of Tractica, the market of commercial drone-enabled services will grow from $170 million in 2015 to $8.7 billion by 2025. The combined market of drone-services for surveying, geodesy coastal mapping is estimated to exceed $2 billion by 2025. Europe accounts for 23.5% of this volume, reaching approximately $470 m.

The direct economic potential for each area of demand is summarized in the figure below.

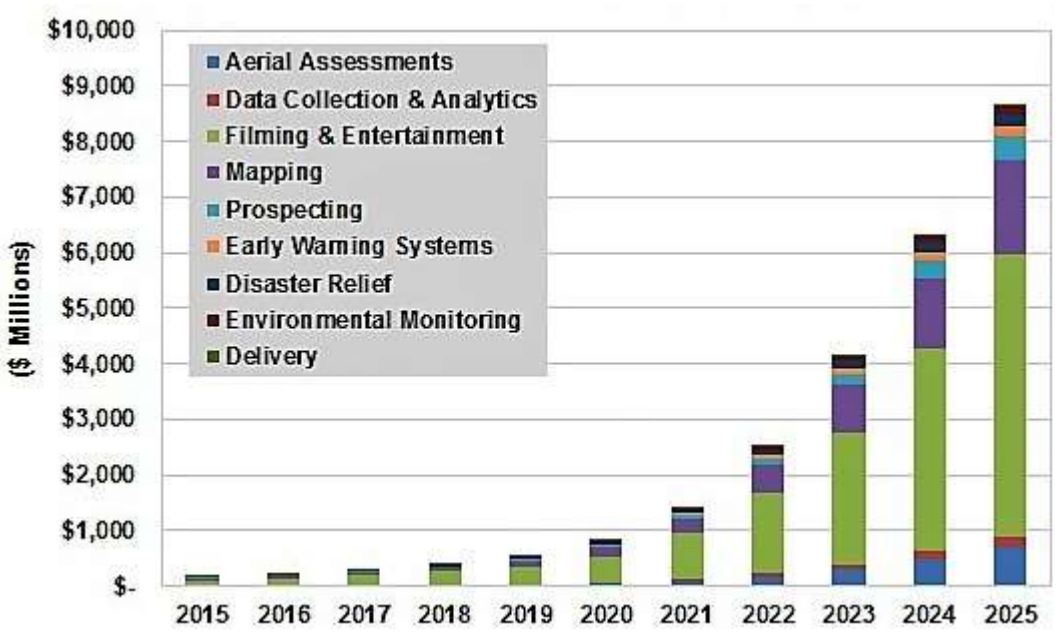


Figure 6: Commercial drone enabled services by application, World markets 2015-2025. Source: Tractica

4.3.3.2 Barriers to enter the market

As in every other market, the drone industry is also exposed to various factors that can block entrance and rapid adoption.

Safety of drone operations

One of the most important aspect for public and private stakeholders is to secure supervision of recreational and commercial drone operations by identifying drone pilots who break the law (PwC 2016). In addition it is important for all UAVs operating in an area to be under a traffic management system in order to prevent collision with other flying objects and especially manned aircrafts.

Privacy

Collection of vast amounts of data, especially over urban areas sometime can include sensitive data confidential or sensitive information about private property or private behaviour. The problem becomes even more complex as it is not clear how those data are stored, used and maintained and who is the owner of sensitive data collected during flight missions. Currently, in Europe and the US national authorities have been consulting with societal actors to propose solution to mitigate this barrier. However drone market regulation by governments evolve much slower than developments in the industry and market growth increases the pressure to regulate this area in order to unleash its full potential. Experience from the industries of mobile technologies and the internet indicate that this barrier will not prevent adoption of drone technologies (PwC 2016).

Availability of insurance coverage

Physical losses or liabilities and third party damages during and after drone operations can be a major factor of preventing adoption of drone technology and entrance in UAV industry. This is more evident when considering physical losses of the drone itself, the equipment it is carrying and ground stations. A parallel market for insurance products for drone related applications is expected to grow substantially.

Industry analysis conclusion:

- Rapidly growing European industry that can generate up to $50 billion per year in related product and service revenues.

- Europe and consequently Cyprus, has the opportunity to obtain a significant role in this rapidly evolving global marketplace is substantial private and public investment is made.
- The opportunity is even greater in relation to drone related services that are expected to generate the greatest sources of value. There is a prospect of over EUR 7.5 billion until 2035 and EUR 10 billion through 2050 for "Drones-As-A-Service" companies.
- However, feasibility of drone solutions will require universal societal acceptance, critical advancements in technology and regulation for privacy and safety

4.3.4 Addressing target market needs

NO-GRAVITY LLC will apply photogrammetric and geospatial analysis methods to provide private and public entities with access to valuable information regarding topography, hydrography, and agriculture structure, soil land uses and development and numerous other tools that will enable them to put more value to their daily operations. Traditional collection of aerial images is still very expensive, and sometimes does not provide the entire spectrum of information and details to the interested parties. Data obtained by drones flights are much more cost-effective and guarantee high data quality in competitive prices. Low costs of high quality data and flexibility of flying missions are establishing UAVs as extremely important to companies that wish to apply geospatial analyses in their business processes (PwC 2016).

The various applications of drone technologies in existing business pipelines is providing the opportunity to entities from the entire spectrum of industry to create new products, services, businesses and business models. It is true however that the needs of each industry (or market segment) differs and demands for different types of drone related services and drone functionalities depending on their capacity, flight time, cameras and sensors.

NO-GRAVITY LLC aims to provide customers substantial value to their business from processed data acquired during drone operations and most importantly information has to be provided fast, in a user friendly manner and in different mediums and formats as well as devices.NO-GRAVITY will provide the final outputs (deliverables) as described above as fast as possible in an understandable, cohesive and comprehensive way

4.3.5 Market segmentation and economic impact assessment

4.3.5.1 Target market and tailor made services

As it was analysed in section 4.3.2 it is really difficult to clearly address the volume of a specific target market for drone activities as technology and data availability constantly change. In addition it is hard to comprehend customer behaviour as the provided services are new and there is a universal lack of data in the literature on customer behaviour. In the section below an assessment of the industries involved as co-producers of drone related services are presented which is considered as the broad base of possible customers and then proceed to a market segmentation according to economic activity.

NO-GRAVITY using the concept of "Drones-As-A-Service" will bring drone technologies to a wide range of clients that make use or will make use aerial data for their daily operations. The target market of NO-GRAVITY includes public and private entities who are active to a wide span of economic activities including products and services. NO-GRAVITY will meet the demand for drone powered activities of the aforementioned market segments with the following services:

- Smart surveying, measurements and 3D modelling using UAVs regarding:
    - Mainstream Terrestrial & marine construction planning and modelling
    - Energy investment plans and especially photovoltaic setup on open space and rooftops
    - Real estate measurements and estimation with ground proof allowing for a precise depiction and model creation with architectural offices
    - Agriculture and vegetation monitoring using dedicated software with the possibility to attach additional sensors on the UAV.
    - Surveillance of industrial sites.
- Generating multimedia content with UAVs including processing and presentation for informational, promotional and educational reasons.
- Complementary consulting services: Supporting the public and private sector into transforming ideas into research projects. More specifically the company with its personnel will offer consultation services to SMEs and public institutions in how to

transform an innovative idea into a successful proposal and receiving funding from existing schemes such as the Horizon 2020 research and innovation European Commission program, EUREKA and the Cypriot RESTART 2016-2020.

4.3.6 Customers

NO-GRAVITY LLC will offer aerial video and photography complementary services to a wide range of professionals enabling them to:

- minimize their operational costs,
- increasing the quality of their products and services by obtaining better precision and measurement accuracy
- create new and add value to existing services and products

The table below presents an indicative number of potential customers for NO-GRAVITY LLC.

Table 6: Potential customers

Market segment	Potential Customers
Construction & engineering	Cadastre surveying organizations, Topographic surveying organizations, EU bodies and organizations dealing with land surveying, construction companies investment consultants
Real estate	Real estate agents, publicity companies, web services
Agriculture	Farmers, Contract farming, pesticide selling companies, irrigation and hydrologists, fish farms forestry
Energy, mining & environment	Solar rooftop installations, mining operators, excavation experts offshore gas and oil drilling platforms, wind energy (turbines) installations, geologists Crisis management bodies, Environment Protection bodies, Urban monitoring and protection bodies, Public Marine bodies, Sea environment protection organizations, institutes and NGOs, Coastguard,
Recreation and education	NGOs dealing with the environment, private individuals, universities, cultural organizations

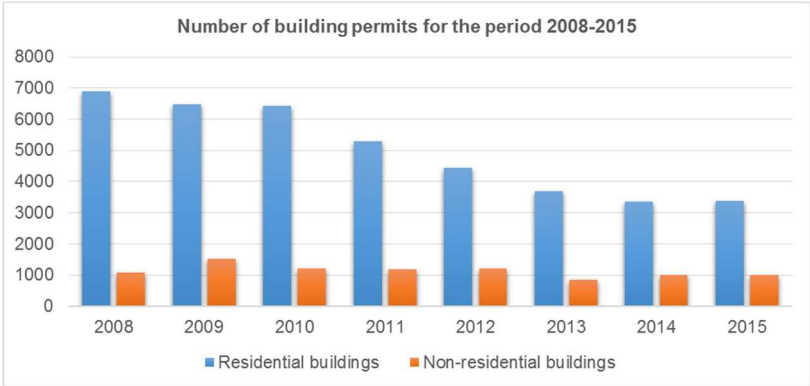
4.3.7 Demand analysis according to market segment

4.3.7.1 Construction & engineering

Architects use aerial Ortho-photos to take important and accurate measurements, better visualization and give to potential customers 3D photorealistic models. Civil engineering

and construction companies are using high accuracy aerial surveys as an integral part of their projects. For surveying and civil engineers having precise and suitable spatial datasets, is a crucial requirement to insure successful engineering projects outcome.

Market potential: In the present analysis the number of building permits as well as the real values that correspond to the construction of the building in a good indicator for market potential for drone related services. According to CyStat[12] in the statistics of 2017 show that the first 3 months of 2017 (January – March) 1451 building permits were issued (real value 315,796,000.00€) while for the same period in 2016 the figures 1.279 permits and € 244,682.000 respectively revealing a rising trend that kicked-off already since 2016. The following 2 figures are depicting the evolution of the market for the period 2008-2015.



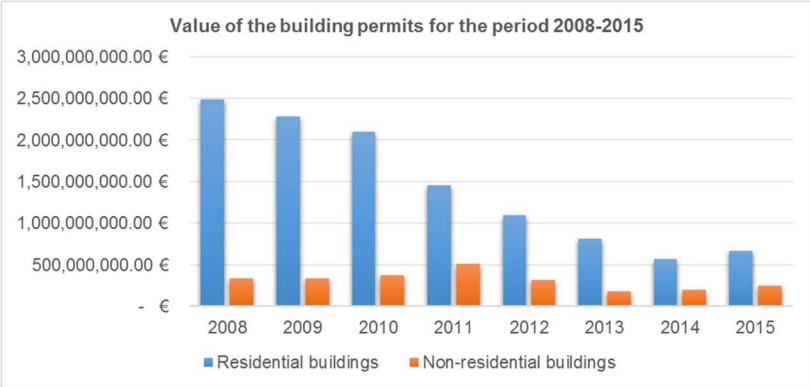


Figure 7: Building permits and value of the building permits for the period 2008-2015 source: CyStat)

12 http://www.mof.gov.cy/mof/cystat/statistics.nsf/industry_construction_62main_gr/industry_construction_62main_gr?OpenForm&sub=2&sel=2

4.3.7.2 Real estate

Real Estate companies using data from drones can provide to their customers the opportunity to immerse themselves into a photorealistic 3D world by visualising an existing property from any possible angle they can imagine. They can show to their potential clients how their future property will look like pre-planned photo-realistic fly-through and still images and stand-alone full-textured 3D model for integration into their own applications (in any format).

According to the portal global property guide[13] , property sales in Cyprus through 2015 increased by 9.4% to 4,952 units compared to 2014. A it can be shown in the figure below sales still remain below the pre-crisis levels however the housing market is expected to continue to improve in the coming years.

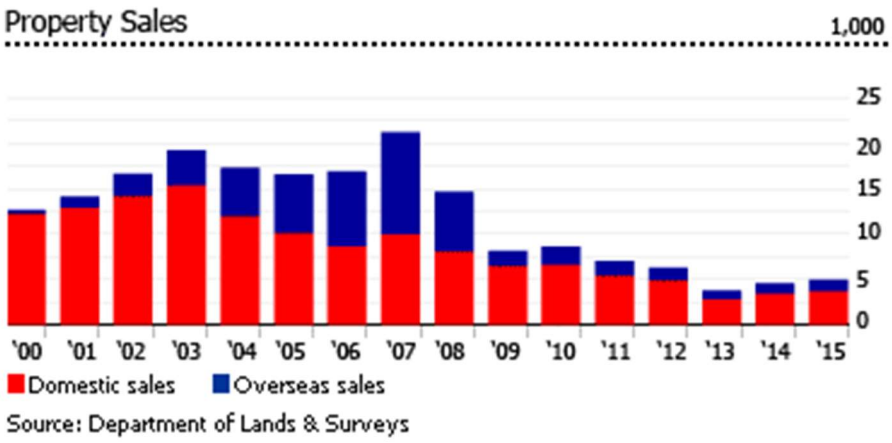


Figure 8: Property sale in Cyprus 2000-2015. Source GPG

4.3.7.3 Agriculture

Precision agriculture calls for continuous land management at a competitive cost. Localizing and quantifying hotspot areas in fields, vineyards even fish farms is now made possible with a variety of indices that can be automatically created. The use of drones for precision agriculture (PA, involves long range surveying (performed mostly by fixed

[13] https://www.globalpropertyguide.com/Europe/Cyprus/Price-History

wing drones) for remote sensing at an altitude of about 150 metres and long range light payload at altitudes below 50 metres (SESAR 2016).

Long range surveying, is applicable to almost all types of farms – including livestock and even fisheries and fish farms – by using sensors to detect characteristics such as crop health or to count and profile livestock in different areas. However it must be noted that even though this application is the main demand driver, a very important factor is farm size and the willingness of the customer to pay. According to a study of Directorate-General for Internal Policies (DG-IP) about PA (2014)[14] a critical aspect for the PA profitability is farm size, as cost/benefit estimations require a minimum farm size to depreciate the investments over the entire farm. In countries having large land fragmentation, such Cyprus, it is challenging to move towards wide adoption of drone related services.

Market potential: According to the report data of the Ministry of Agriculture of Cyprus (2013)[15] from the 118.400 hectares of farming land 75% of farm holdings are less than 2 hectares, 20% in from 2-10 hectares and only 1,6% is more than 30 hectares. By applying the methodology for drone services adoption in farming provided by SESAR (2016:55) and knowing that European farmers are willing to spend at least 10 euro per hectare the total estimated amount for drone related services is 64.380,00 €. Considering that the average farm will use the services on an average 2 times per year the total amount is estimated to **128.760,00 €.**

4.3.7.4 Energy, mining & Environment

Energy

Drone service in Energy is about local site inspections and long range utility inspections. According to SESAR (2016), drones offer the possibility to inspect locations that are difficult to access such as wind farms, pipes, refinery equipment off-shore platforms,

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14 http://www.europarl.europa.eu/RegData/etudes/note/join/2014/529049/IPOL-AGRI_NT(2014)529049_EN.pdf

15 http://www.moa.gov.cy/moa/da/ead/ead.nsf/0/CC795D1070EE1EC9C2257C0F00275C5D/$file/SWOT-FINAL%2015.20.pdf

chemical production plants without putting personnel at risk. The imagery collected can be later used to make a precise assessment of maintenance needs. Using data from drones will reduce overall operation risk, employment hazards, bring down maintenance cost and thus improve business competitiveness.

Oil and gas: A defining point for the energy market as a whole in Cyprus is the discovery of hydrocarbons in Cyprus' Exclusive Economic Zone (EEZ) that has created the possibility for Cyprus to become a new energy hub in Eastern Mediterranean. According to the portal investincyprus.org, investments of approximately €3 billion will be needed to build the exploitation structures of the field and the pipelines towards Egypt[16]. Moreover, important prospects will be created by the oil storage terminal of total cost up to €300 million which is designed and constructed to be the first terminal of its kind in the Eastern Mediterranean, bridging Europe and the Black Sea with markets in the Middle East and Asia.

Renewable energy: According to the EU RES Directive 2009/28/EC[17] specific national targets must be achieved by each individual Member State, regarding the share of renewable energy generated in each Member State by the year 2020. For Cyprus, the national target regarding share of energy produced from RES is set to at least 13% out of the gross national final consumption of energy in 2020. Currently investment incentives and financial measures have been set in place to meet the target at the following technologies:

- Solar energy
- Wind energy
- Biomass

Renewable energy industry and consequently related services is definitely growing while know how and innovative products and services are welcomed by the Government

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[16] http://www.investcyprus.org.cy/en/growth-sectors/cyprus-investment-sectors/energy-sector

[17] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028

Mining

Regarding mining industry, drones are already being demanded for civil surveying (excavation, backfilling, volumetric assessment) and site management. The market potential and business case according to the methodology developed by SESAR (2016) mining contracts for drone services include large data processing and can exceed € **10.000** per drone annually. For 2013, according to the USGS Minerals Year book report for Cyprus (2012)[18] the gross value added (in constant dollars) by the mining and quarrying sector was €15.3 million. Even though it is a market in decline, securing limited contracts of greater value is attractive for NO-GRAVITY LLC.

Environment

During disaster events such as landslides and floods, reliable and rapid response to assist the government and the emergency services is essential in their decision making and assessment of damage. Coastal mapping applications related to drones include precise coastline mapping, intertidal area calculations and updates, shallow-water bathymetry, coastal erosion, litter detection and benthic habitat mapping. Cyprus is expected to be severely affected by climate change in energy, agriculture and coastal zones and aerial data for surveying will be on demand. As Zachariadis (2012) in his study underlines "… most importantly, adequate monitoring mechanisms should be set up in order to provide much needed data which can send early warnings to policy makers and the public and can help avoid large natural and economic damages at a later stage" (Zachariadis, 2012).

4.3.7.5 Recreation and education

Demand for interactive multimedia content for promotional, recreational or educational activities is emerging at a global level with multiple uses. More specifically, media and film industry are using drones for sport event broadcastings, movie making news

[18] https://minerals.usgs.gov/minerals/pubs/country/2013/myb3-2013-cy.pdf

coverage and interactive educational content that in the future can be combined with augmented reality technology (SESAR 2016).

4.3.8 Domestic supply analysis

As stated before, the number of companies providing exclusively identical or similar kind of services is limited creating a gap in the market that even though currently is not very evident, is expected to grow substantially until 2025.

4.3.8.1 Competition analysis

This section analyses the positioning of NO-GRAVITY in the competition by analysing the strengths and weaknesses 3 of the most important competitors. The analysis does not consider individual drone operators and free-lancers as the offering, equipment and expertise cannot be comparable. In addition the analysis does not include traditional surveyors and engineering firms that can offer similar services. It is recognised however that the two categories not included in the analysis can absorb part of the market demand and thus reduce market share for NO-GRAVITY LLC. Finally, the analysis was conducted having a set of different various factors[19] and the way NO-GRAVITY will perform in relation to the competition. In the analysis the importance customers pays on the different factors has also been considered following data for customer willingness to purchase drone services and goods provided by SESAR (2016).

Competitor 1 - SURVERIAL

http://www.aerialcyprusdrone.com

Table 7: Competitor analysis 01

Strengths	Weaknesses	Strategy to reduce the impact:
• Similar offering • Already in the market (2015)	• Located in Paphos Cyprus so it covers different a geographical	• Launch a targeted web presence focusing on

[19] The factors used in the analysis are the following: Price/Quality/Service/Reliability/Expertise/Reputation/Location/Appearance/Sales Method/Credit Policies/Advertising/Image

• Decent equipment • Wide range of applications	area and market for small scale projects • Obscure and impersonal web portal • Lack of social media presence • No personnel except the owner • No participation to R&D projects • No innovative new products to enhance expertise • No fixed wing UAV	agriculture applications and energy • Ability to assume multiple projects at the same time and create economies of scale • Promote more services and products created by knowhow obtained by participation to R&D projects
Competition impact: Medium		

Competitor 2 - Drones Aviation

http://dronesaviation.com/

Table 8: Competitor analysis 02

Strengths	Weaknesses	Strategy to reduce the impact:
• Similar offering • Already in the market (2015) • Experience (flight hours) • Availability of data of aerial photos & videos, • Training to customers (flight academy).	• Located in Greece so it covers different a geographical area and local market. In Cyprus there is only a warehouse. • The company keeps the impression that is a hobby club for Drones • No participation to R&D projects • No innovative new products	• Launch a much more effective web presence and campaign targeting market areas of high expertise. • Ability to assume multiple projects at the same time and create economies of scale • Promote more services and products created by the knowhow obtained by participation to R&D projects
Competition impact: **Low**		

Competitor 3 – 360ifly

http://www.360ifly.com

Table 9: Competitor analysis 03

Strengths	Weaknesses	Strategy to reduce the impact:
• 360iFly Ltd are the premier and only fully Cyprus Department of Civil Aviation (DCA) approved Drone operating and training company in Cyprus. • Similar offering • Claim to be leaders • Already in the market (2015) • Decent equipment • Wide range of applications • Flight academy	• Located in Paphos Cyprus so it covers different a geographical area and market for small scale projects • Obscure and impersonal web portal • Lack of social media presence • No mention to R&D projects • No innovative new products to enhance expertise • No fixed wing UAV	• Launch a targeted web presence focusing on agriculture applications and energy • Promote more services and products created by knowhow obtained by participation to R&D projects
Competition impact: **High**		

4.3.9 Legal framework

According to the portal of the Department of Civil Aviation of Cyprus[20] "… use and operation of drones, flying within the airspace of the Republic of Cyprus, is governed under the Civil Aviation Act (N213(I)/2002/2015), the Ministerial Decree No.402/2015-Provisions for the Operation of Unmanned Aircraft Flights within the Republic of Cyprus – and the Decision No. 403/2015 – Exemption of Unmanned Aircraft from the Aircraft Registration Requirements". A careful study of the legislation reveals that there are significant limitations on drone handling and ownership that can be summarized below:

- According to section 4 of the Law, drone owners are expected to register their aircraft to the Civil Aviation Department by e-mail.

[20] http://www.mcw.gov.cy/mcw/dca/dca.nsf/e10e3aa9a75bf1fcc22570200035de1f/bbff6a8be57d3c07c2257f45002657cc?OpenDocument

- Permission for Open category drones[21] : up to 50 meters above ground or sea level.
- Permission for Special category drones[22]: up to 120 meters above ground or sea level.
- Direct visual contact with the UAV is mandatory and the distance between the operator and the drone should not exceed 500 meters.

All UAVs either used for recreation, or other purposes, are subject to the provisions of the above legislation to secure safety of flights and protection of persons and property on the ground. NO-GRAVITY personnel operating drones will register according to the provisions of the law, receive training and be licenced for Special category for commercial applications.

4.3.10 SWOT analysis

Table 10: SWOT Analysis

Strengths	Maximise them by:
• Founder is specialized and experienced personnel. • Innovative and customized service provision. • A superior location where the service can be produced. • Flexibility due to small size. • Knowhow and access to funding sources through EU & National funding schemes. • Provision of consultation services to possible clients regarding funding opportunities can create additional revenue. • Low establishment and operational costs as the company will seek to share premises with other companies, or look for a business incubator.	• Further improving the quality. • Further training through public personnel training programs funded by Human resources development Authority in Cyprus (ΑΝΑΔ)[23]. • Participating regularly in expositions abroad as well as information and funding events. • Continuing the cost sharing policy and maximize use of resources with strategic partners. • Expanding alliances beyond Nicosia to the city of Limassol. • Purchasing of new equipment and software. • Submitting proposals for private and/or public funding for innovative projects in R&D.

[21] The OPEN category covers the use of a drone, having a total take-off mass of less than three (3) kg, only used for non-commercial recreational, sports, training, racing or display purposes.

[22] The SPECIAL category covers uses of drones for commercial activities with the take-off weight of which exceeds three (3) kg independently of the nature of their use (commercial / non-commercial etc.).

[23] http://www.hrdauth.org.cy/

• Strong alliances and business networks forged locally providing a steady income and subcontracting possibilities. • Use of existing equipment belonging to the founder. • Previous experience in social networking and digital marketing will minimize costs of marketing. • Purchase of new drones (Phanton 4) and fixed wing UAV	• Subscribing to local and international e-magazines and websites such the EARsel, GeoConnexion, Earthzine etc.
Weaknesses	**Minimise them by:**
• Low branding as the company will be newly established. • Lack of patent protection knowhow for the new services that are planned • Poor reputation among customers. • Limited connections to large investment and construction companies operating in Cyprus. • General limitations of a newly established SME / start-up to participate in large scale development or construction projects (only as subcontractor). • Many responsibilities concentrated to the director and founder of the company. • Limited access to private funding and bank loans due to high fees and operation costs and high interest rates.	• Launch a very detailed branding strategy targeting market segments that are not competitive (agriculture). • Minimize risk to customers and increase credibility (mentioned on sections above). • Participation to national and international event and engagement to face to face meetings with industry. • Flat hierarchy management structure will allow for responsibility sharing. • Intention of the owner to use own assets in terms of cash flow problems.
Opportunities	**Maximise them by:**
• Dropping prices of new equipment and technology. • Huge advances in technology regarding hardware and software for drone related services and products • Good prospects of the Cypriot economy for growth. • Huge potential and increase in market share that will emerge from the political solution and unification of the island. • The huge investment and construction plans regarding the energy sector from the discovery of the Aphrodite gas field off the southern coast of Cyprus.	• Constantly be informed for equipment benchmarking to select the optimum. • Reinforcing existing and developing new contacts and relationships on the occupied part of the island to meet market needs in case of unification. • Participating regularly in info days for funding opportunities and networking events. • Participate in workshops on development programs locally and consult professionals

• The prospect of private investment in new marinas and private villas by Russian capital. • Funding opportunities in Cyprus and EU. • Development programs in Cyprus & EU benefiting new companies	
Threats	**I will minimise them by:**
• Low cost of capital lifts entry barriers in the same market therefore it is easy for new actors to provide the same service in the market. • Stricter government regulation on UAVs. • Technological advancements that will make technology available to everyone. • Possible slowdown of the economy and reluctance of public sector to make use of the service provided. • Social and family relationships may prevent new customers as they will rely on traditional channels. • Unstable political situation in Mediterranean and middle-east.	• Constantly updating and enhancing the service. • Engage into state of the art R&D to innovate. • Follow change management principles to stay ahead of the competition. • Tailor made marketing plan to attract "traditional" customers. • Offer services that respond to the emerging socioeconomic and political challenges in the area.

4.4 Business strategy & Implementation

4.4.1 Objectives

The goal of NO-GRAVITY LLC according to its five year plan is for the first year to establish itself in the local market and create a first set of services that are competitive and appealing to a first pool of identified clients.

NO-GRAVITY as a newly established company will set up the following initial goals:

- Maintain cash flow control and managing economic challenges.
- Develop a well-known brand.
- Develop and expand a customer base.
- Improve the offered services and add new.
- Develop strategic alliances and expand networks.
- Acquire state of the art equipment.

During the first year of operations NO-GRAVITY will try to fulfil successfully its plan with successful provision of services locally, maintaining and managing cash flows, building strategic alliances with local stakeholders in industry and especially a local network of innovative companies applying for public and private funding

In addition to the overall goals the following goals have been set for the first year of operation:

- Adding value for customers through improving quality and efficiency.
- Increase business networking by 25% (2nd year).
- Recruit one experienced web and mobile applications developer.
- Participate in 5 local and international events and expositions.
- Invest in new equipment by acquiring an additional low to medium cost UAV.

4.4.2 Strategy to achieve goals

According to Porter's paradigm for choosing the best strategy, NO-GRAVITY will employ elements of differentiation which involves making products or services different from and more attractive than those of the possible competition insisting in integrating state of the art technologies.

In order for a differentiation strategy to succeed NO-GRAVITY will constantly engage into:

- Excellent research development and innovation that will emerge through participation in international funded projects.
- Delivering high-quality services that will focus on the customer needs providing a user friendly, fast and transparent recurring delivery.
- Effective sales and marketing, to make clear the overall benefit a possible customer can have.

Within the above overall strategy NO-GRAVITY will develop a set of procedures, tools and tactics that lead to effective implementation of goals.

More specifically NO-GRAVITY will:

- Proceed to a lean management concept defining value from the standpoint of the end customer, identifying each step in a business process and eliminating steps that do not create value and finally maintaining a tight step sequence.
- Improve customer experience by getting personal and providing multiple ways of feedback developing at the same time an entertaining experience of the service provision (for example the service package offering will include UAV captured multimedia content, a promotional video, and web based tracking of the service development steps).
- Draw and update on a 6 month basis an effective marketing plan based largely on web campaigning.
- Transfer each objective into milestone and track development using management diagrams such as a Gantt chart.
- Make use of all possible funding opportunities provided by the Human resources development Authority in Cyprus (ΑΝΑΔ) in order to train employees, improve leadership and retain a competitive and innovative human capital.
- Benefit of the funding opportunities provided nationally to invest in equipment, infrastructure and fame through Ministry of Energy, Commerce, Industry and Tourism of the Republic of Cyprus[24]
- Benefit of the funding opportunities provided nationally and internationally to invest in equipment, infrastructure and fame through the European programmes Coordination and Development DG portal[25].
- Discuss and create in advance a private funding scheme scenario (loan) that will be put in place to overcome cash-flow inefficiencies.
- A brief plan of the most important milestones for NO-GRAVITY LLC for the following 5 years is presented to the figure below:

[24] http://www.mcit.gov.cy/mcit/mcit.nsf/dmlindex_en/dmlindex_en?OpenDocument

[25] http://www.fundingprogrammesportal.gov.cy/

Milestones	Year	2018		2019		2020		2021		2022	
	Semester	A	B	A	B	A	B	A	B	A	B
	Establishment										
	Location & premises										
	Software & small drone purchase										
	Strategic aliances										
	Website & Social media										
	Apply for R&D funding			RESTART		H2020			H2020		
	Recruiting of web developer										
	Recruiting of business analyst										
	Purchase of fixed wing drone										
	Applying of training funding										
	Promotion & web campaign launch										

Figure 9: NO-GRAVITY LLC milestones

4.4.3 Credibility and risk reduction

Increasing credibility and reducing the customer's risk in doing business with a newly established is a challenging task. Lack of proven record, inefficient reputation management and traditional and established communication channels may prevent a newly established company to convince new clients.

NO-GRAVITY has a very specific plan to overcome those difficulties and enhance credibility and minimize customer risk. More specifically the following strategy will be followed:

- A website portal will be created where all portfolio of previous work will be presented with all the relevant details. Client testimonials will be cited and a contact online panel will be available to questions from possible clients
- Through the web campaign, the yearly newsletter, the SEO techniques and the physical presence to relevant events as described in the sections above a strong online and physical presence will be created.
- Success stories in R&D implemented in-house or in the framework of research projects will reach the news of local media.
- A set of professional promotional material available online will be created (leaflet, video, customer folder).
- NO-GRAVITY will also approach civil society, universities and local communities and will provide service for free on specific occasions maintaining an activity and responsible CSR campaign.
- A money-back guarantee will be available to allow customers to feel confident that even if the service is not satisfactory a compensation will be provided.

4.5 Marketing strategy

The following section will describe the marketing strategy that will allow taking our service to the target market.

4.5.1 Services provided

All services the company will offer view the final output as a coproduction with the client. The client will be generating the requirements on the design phase on a mock-up basis and will have a constant overview on the process using online monitoring tools.

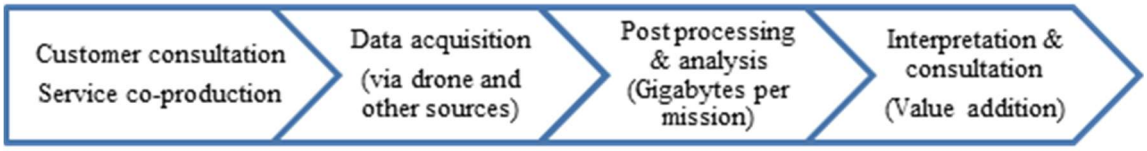

Figure 10: Drones as a service model

In the table below a matching of target markets and corresponding services of the company is presented.

Table 11: Target market & corresponding services

Target Market	Corresponding service (value creation)
Construction & engineering	• Terrestrial & marine construction planning and 3D modelling • Surveillance of industrial sites.
Real estate	• Real estate measurements and estimation with ground proof allowing for a precise depiction and model creation with architectural offices
Agriculture	• Agriculture and vegetation monitoring using dedicated software with the possibility to attach additional sensors on the UAV.
Energy & mining	• Energy investment plans and especially photovoltaic setup on open space and rooftops • Surveillance of industrial sites. • Volumetric measuring of mines
Recreation and education	• Generating multimedia content such as promotional videos, education maps, aerial filming of social events (weddings etc.)

The core services that will be elaborated and will be offered as a stand-alone or customized service include:

- Smart surveying, measurements and 3D modelling using UAVs regarding:
    - Mainstream Terrestrial & marine construction planning and modelling.
    - Energy investment plans and especially photovoltaic setup on open space and rooftops.
    - Real estate measurements and estimation with ground proof allowing for a precise depiction and model creation with architectural offices.
    - Agriculture and vegetation monitoring using dedicated software with the possibility to attach additional sensors on the UAV.
    - Surveillance of industrial sites (service under construction).
- Generating multimedia content with UAVs including processing and presentation for informational, promotional and educational reasons.
- Supporting the public and private sector into transforming ideas into research projects. More specifically the company with its personnel will offer consultation services to SMEs and public institutions in how to transfer an innovative idea into a successful proposal and receiving funding from existing schemes such as the H2020 SMEs program, EUREKA.

4.5.2 Pricing strategy

Pricing services for a newly established company like NO-GRAVITY comes from the personal ability to deliver. Potential customers will be given testimonials, portfolios, and case studies before they will consider engaging into the service co-production. The company will try to productize specific service steps in order to help customers understand exactly what NO-GRAVITY can do for them.

The variable costs for flying a small or large drone usually depends on flight hours. Consequently, in the market of drone-enabled aerial services, pricing is usually offered per flight hour. Based on cost estimations including depreciation of the initial UAV investment within the next fine (5) years, operational and maintenance costs as well as other expenses and mark-ups, a normal pricing strategy for NO-GRAVITY will have a range of 250 €/h to 1.000€/h. according to the project, drone used and data processing time.

Pricing scenario

The pricing strategies that will be consider below includes a mixture or Rate-Based Pricing, Project-Based Pricing and Value-Based Pricing. More specifically the table below provides a detailed estimation on the service pricing using a scenario where a customer wants to build on an area of 30.000 sqms and asks for the entire package of services.

Table 12: Pricing scenario

Subject: Land Surveying Services (classic way) and the Aerial Photography with some of the most common products **Example:** of an area of 30000 sqm for a Building development on a mountain area.
Our full services package includes:
• A boundary survey establishing the legal perimeter of the plot. **Price: 3000 +VAT**. • A topographic Survey helping you identify natural features (big trees etc.) at the plot. Using Total Station measurements. **Price: 800 + VAT**. • A plan of the most appropriate passage from the main road to the selected area of the residence. The vertical alignment of the proposed road is going to be included. **Price: 1300 + VAT.** **Aerial Photography. Phases description:** • Creation of the flight plan and selection of the proper height flight according to our needs (the accuracy of the deliverables – to get 5cm px size about 100m flight height, depends on the camera) • Appropriate target selection and instalment of the targets on the site measuring them using a GPS system. • Completion of the aerial flight covering the whole of the area of interest, by taking all the vertical images that we need to create the photo mosaic needed. **Price: 3000 + VAT** **Products to be delivered (customized):** • Georeferenced OrthoPhotoMap. The true ortho-photos will be delivered at a GSD of 5 cm for the whole area of interest. **Price: 500 + VAT** • DSM (Digital Surface Model) to work with in 3DStudio Max or other visual and graphic app. A short video of a virtual tour in the 3D Model of the plot. **Price: 500 + VAT** • DTM (Digital Terrain Model). Create a polygonal model (mesh) **Price: 500 + VAT** • Contour Lines of the area with 0.5m interval. **Price: 300 + VAT** • Volumetric Calculations could also be possible if needed. • Video and various aerial photos (Oblique Photos) of the site. **Price 1000 + VAT**
Total value of complete Package without discounts **10.900 + VAT**

4.5.3 Distribution channels

NO-GRAVITY will be based in the centre of the capital city of Nicosia which by itself is a competitive advantage in terms of "Position". The company premises and its conference room will be used for the phase of elaborating the requirements of a specific service and the coproduction phase.

The main distribution channel will be direct sales where NO-GRAVITY will contact customers without any intermediaries through visits, telephone or online and have complete control over presentation of your offers and pricing. This will allow for immediate feedback by the customer and adjustment of marketing and pricing.

4.5.4 Promotional tactics

The promotion strategy of NO-GRAVITY, focuses on creating and developing a strong corporate identity that clearly defines our target audience.

4.5.4.1 Promotion to enhancing credibility and minimize customer risk.

The following steps will be employed to achieve an effective promotion:

- Audience: Create a stakeholder data base through literature review and search engine cataloguing all possible customers in Cyprus. This will allow for customized interaction with a growing recipient list.
- Social Media: as employing social media (Facebook, twitter, LinkedIn) is the cheapest way to reach a customer. The company has already appointed the selected employee as responsible for the social media.
- Preparation of quality content available through the website will feed SEO and social media.
- Involve paid advertising (Display/PPC/) especially through Google Ads.
- After the company reaches a certain level of maturity dedicated workshops and events will be employed.
- Strong brand identity through a Logo, a website and mobile website, newsletter, brochure and presentation of success stories through the web.

Figure 11: Proposed enterprise logo

4.5.4.2 Marketing budget

In order to minimize setup costs NO-GRAVITY will not launch a significant marketing budget for the first year of operation as it will rely heavily on personal networks, website and social media. According to the 5 year plan of the company 4 paid web campaigns will be launched in the first semester of 2018, the second semester of 2019, the second semester of 2020 and the second semester of 2021

Milestones	Year	2018		2019		2020		2021		2022	
	Semester	A	B	A	B	A	B	A	B	A	B
	Promotion & web campaign launch										

Figure 12: Web campaign plan

The total cost of the promotional campaign through paid advertising is estimated to **2.000 €**

4.6 Financial plan

4.6.1 Assumptions

The following analysis will try to substantiate the fact that establishing NO-GRAVITY presents itself as a good business opportunity, even taking under consideration the worst case scenario.

The assumptions made for the current financial plan are based on the potential of every market segment analysed as well as data from the qualitative interviews obtain with different stakeholders on number of contracts per month. It must be stated that the analysis that will follow presented is based on a moderate scenario that does not consider:

- Increasing advancements in technology and overall product and services cost optimizations related to drone operations.

- Rapid pace of substitution of numerous traditional services by drone related services which cannot be directly measured.
- Rising societal acceptance.
- Maturing legal frameworks that can allow for more operations to be conducted.

4.6.2 Sales forecast

The tables below present the 3 different scenarios for NO-GRAVITY LLC that could dictate its course through its first 3 years of operations.

Services provided (Best scenario)	Units sold annually	Average per month	Average price per unit	Annual revenue per product
Real Estate / multimedia content / social filming	18,0	1,5	800,00 €	14.400,00 €
Construction & Engineering contract	20,0	1,7	1.500,00 €	30.000,00 €
Energy investment plan contract	6,0	0,5	4.500,00 €	27.000,00 €
Agricultural and industrial sites contracts	7,0	0,6	10.900,00 €	76.300,00 €
Total	51,0	4,3	17.700,00 €	147.700,00 €

Services provided (Worst scenario)	Units sold annually	Average per month	Average price per unit	Annual revenue per product
Real Estate / multimedia content / social filming	12,0	1,0	800,00 €	9.600,00 €
Construction & Engineering contract	20,0	1,7	1.500,00 €	30.000,00 €
Energy investment plan contract	5,0	0,4	4.500,00 €	22.500,00 €
Agricultural and industrial sites contracts	4,0	0,3	10.900,00 €	43.600,00 €
Total	41,0	3,4	17.700,00 €	105.700,00 €

Services provided (Moderate scenario)	Units sold annually	Average per month	Average price per unit	Annual revenue per product
Real Estate / multimedia content / social filming	12,0	1,0	800,00 €	9.600,00 €
Construction & Engineering contract	20,0	1,7	1.500,00 €	30.000,00 €
Energy investment plan contract	7,0	0,6	4.500,00 €	31.500,00 €
Agricultural and industrial sites contracts	5,0	0,4	10.900,00 €	54.500,00 €
Total	44,0	3,7	17.700,00 €	125.600,00 €

Figure 13: Sales forecast scenarios

The services have been grouped into 4 categories according to their nature

- Real Estate, multimedia content & social filming contracts.
- Construction & engineering contracts.
- Energy investment plan contracts.
- Agricultural and industrial sites contracts.

From the analysis of the tables above the moderate scenario dictates that NO-GRAVITY LLC will primarily focus on construction & engineering contracts as this is the area it

wishes to expand and it will manage to secure 44 contracts of all categories amounting EIR 125.600,00 in total.

It must be stated that during its first year of operation due to the fact that no fixed wing drone will be available the company is expected to secure no contracts in agriculture therefore the estimated revenue for the first year of operations should account only for revenue from the first three categories of services.

4.6.3 Profit and loss forecast

The following figure shows a forecast of the profits and loss for the first 3 years taking into account a growth of 6% into the prices of contracts as well as the investment plan (milestones) to purchase new equipment in the beginning of 2019 (2nd year of full operations).

Assumptions

- Annual tax rate: 12,5%
- Inflation: 2,5%
- Product price increase annually: 6,0%

Assumptions	2018	2019	2020
Annual cumulative price (revenue) increase	0,0%	5,0%	10,0%
Annual cumulative inflation (expense) increa	0,0%	2,5%	5,0%

Income	2018	% of OI	2019	% of OI	2020	% of OI
Operating Income						
Real Estate / multimedia content / social filmi	9.600	13,5%	10.080,00	8,8%	11.088,00	8,8%
Construction & Engineering contract	30.000	42,2%	31.500,00	27,5%	34.650,00	27,5%
Energy investment plan contract	31.500	44,3%	33.075,00	28,8%	36.382,50	28,8%
Agricultural and industrial sites contracts	-	-	40.000,00	34,9%	44.000,00	34,9%
Total Operating Income (OI)	**71.100,00 €**	100,0%	**114.655,00 €**	100,0%	**126.120,50 €**	100,0%
Non-Operating Income						
Interest Income	-		-		-	
Rental Income	-		-		-	
Gifts Received	-		-		-	
Donations	-		-		-	
Other	-		-		-	
Total Non-Operating Income	**- €**		**- €**		**- €**	
Total Income	**71.100,00 €**	100%	**114.655,00 €**	100%	**126.120,50 €**	100%

Figure 14: Three year income projection

According to the moderate scenario for sales forecast NO-GRAVITY targets EUR 71.100,00 of total revenue for sales for the first year which increases to EUR 114.655,00 with the introduction of the fix wing drone in the second year and securing contracts from agriculture and industrial sites monitoring. During the third year of operations total revenue is EUR 126.120,00 taking under consideration that the company has hired 2 more employees and has reached its full potential in terms of capacity.

Expenses						
Operating Expenses						
Accounting and Legal	1.000	1,4%	1.025	0,9%	1.051	0,8%
Advertising	500	0,7%	513	0,4%	525	0,4%
Dues and Subscriptions	500	0,7%	513	0,4%	525	0,4%
Insurance	1.200	1,7%	1.230	1,1%	1.261	1,0%
Maintenance and repairs	2.000	2,8%	2.050	1,8%	2.101	1,7%
Office Supplies	1.000	1,4%	1.025	0,9%	1.051	0,8%
Postage	100	0,1%	103	0,1%	105	0,1%
Rent	4.800	6,8%	4.920	4,3%	5.043	4,0%
Salaries and Wages	39.600	55,7%	55.590	48,5%	56.980	45,2%
Telephone	250	0,4%	256	0,2%	263	0,2%
Travel	2.500	3,5%	2.563	2,2%	2.627	2,1%
Utilities	1.000	1,4%	1.025	0,9%	1.051	0,8%
Web Hosting and Domains	50	0,1%	51	0,0%	53	0,0%
Total Operating Expenses	**54.500,00 €**	76,7%	**70.862,50 €**	61,8%	**72.634,06 €**	57,6%
Non-Recurring Expenses						
Establishing costs	1.000	1,4%		-		-
Furniture & Vehicles	5.000		2.000			
Equipment (drone)	1.500		10.000			
New personnel					14.000	
Software	3.500	4,9%		-		-
Total Non-Recurring Expenses	**11.000,00 €**	15%	**12.000,00 €**	10%	**14.000,00 €**	11,1%
Total Expenses	**65.500,00 €**	92%	**82.862,50 €**	72%	**86.634,06 €**	69%
Net Income Before Taxes	5.600,00 €		31.792,50 €		39.486,44 €	
Income Tax Expense	700		3.974		4.936	
NET INCOME	**4.900,00 €**		**27.818,44 €**		**34.550,63 €**	

Figure 15: Three year profit & loses projection

Net income for the first year of operations is expected to EUR 4.900,00 after taxes while the coming year investment in equipment and labour (1 fixed wing drone and 1 additional employee) will drive net income at EUR 27.818,44. During the final year total income is expected to reach EUR 34.550,63

4.6.4 Break-even point analysis

The table below present the fixed and variable costs per contract per year. The following scenario for the breakeven point analysis is considered to be moderate as it takes into account that the company signs only 3 contracts per month on an average price of 2.266

€ which is considerably less than the average price (4,425 €) when the fixed wing drone will enter service in the second year. The number of contracts and average price for the first year of operations is drawn from figure 12 above.

Table 13: Fixed & Variable cost

Fixed Cost	
Accounting and Legal	1.000,00 €
Advertising	500,00 €
Dues and Subscriptions	500,00 €
Insurance	1.200,00 €
Maintenance and repairs	2.000,00 €
Office Supplies	1.000,00 €
Postage	100,00 €
Rent	4.800,00 €
Salaries and Wages	39.600,00 €
Telephone	250,00 €
Travel	2.500,00 €
Utilities	1.000,00 €
Web Hosting and Domains	50,00 €
Establishing costs	1.000,00 €
Furniture & Vehicles	5.000,00 €
Software	3.500,00 €
Equipment (drone)	1.500,00 €
Total Fixed Costs:	**65.500,00 €**
Variable Costs per contract	
Travel expenses for personnel	90,00 €
Equipment maintenance and replacement	50,00 €
Communications	5,00 €
Administration fees & licences	5,00 €
Consumables	20,00 €
Var. Costs / Contract	**170,00 €**
Pricing and Contribution	
Average contract price	2.266,00 €
Contract Contribution Margin:	2096,00 €
Volume	
Number of Contracts to break-even:	**31**
Expected Contracts Per Month:	**3**

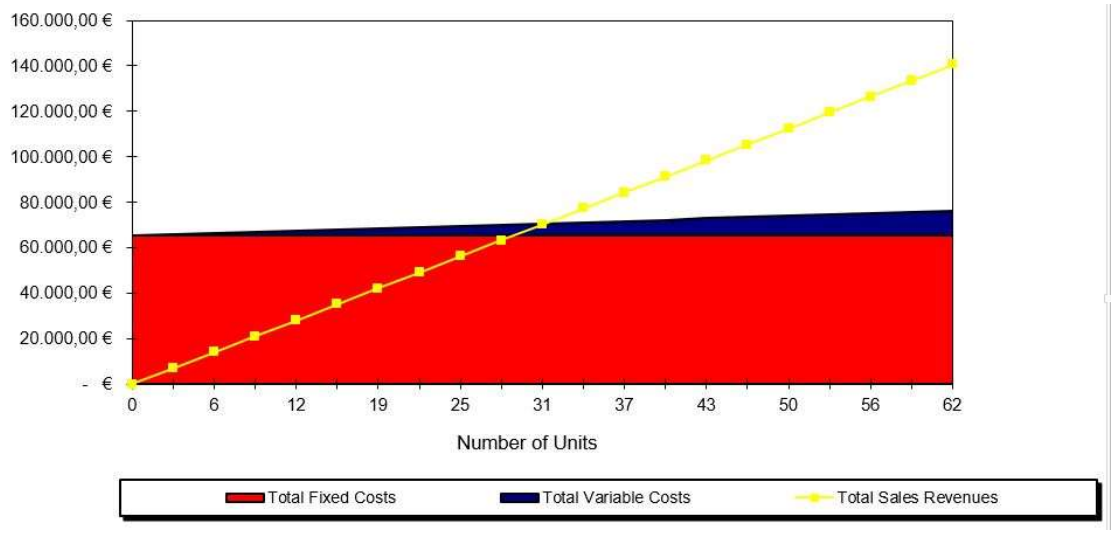

Figure 16: Break-even point chart

Table 14: Break-even table

Contracts Required for Break-Even:	31
Sales Required for Break-Even:	70.812,00 €
Variable Costs Per Contract:	170,00 €
Total Variable Costs:	5.270,00 €
Total Fixed Costs:	65.500,00 €
Months to Break-Even:	10,3

Number of Contracts	Total Fixed Costs	Total Variable Costs	Total Sales Revenues
0	65.500,00 €	- €	- €
3	65.500,00 €	527,00 €	7.024,60 €
6	65.500,00 €	1.054,00 €	14.049,20 €
9	65.500,00 €	1.581,00 €	21.073,80 €
12	65.500,00 €	2.108,00 €	28.098,40 €
16	65.500,00 €	2.635,00 €	35.123,00 €
19	65.500,00 €	3.162,00 €	42.147,60 €
22	65.500,00 €	3.689,00 €	49.172,20 €
25	65.500,00 €	4.216,00 €	56.196,80 €
28	65.500,00 €	4.743,00 €	63.221,40 €
31	65.500,00 €	5.270,00 €	70.246,00 €
34	65.500,00 €	5.797,00 €	77.270,60 €
37	65.500,00 €	6.324,00 €	84.295,20 €
40	65.500,00 €	6.851,00 €	91.319,80 €
43	65.500,00 €	7.378,00 €	98.344,40 €
47	65.500,00 €	7.905,00 €	105.369,00 €
50	65.500,00 €	8.432,00 €	112.393,60 €
53	65.500,00 €	8.959,00 €	119.418,20 €
56	65.500,00 €	9.486,00 €	126.442,80 €
59	65.500,00 €	10.013,00 €	133.467,40 €
62	65.500,00 €	10.540,00 €	140.492,00 €

From the analysis above it is evident that the company needs to sign **31** contracts to break even and it will take **10, 3** months of operations to reach the break-even point.

4.6.5 Financing & private assets of the owner

The company owner owns private assets that is willing to use (in forms of a guarantee for a bank loan or increase to the capital) in case the company fails to meet financial obligations. The company has investigated the scenario of obtaining a financial support of EUR 20.000,00 to support the business operations and purchases for the 2nd year as business loan from the Bank of Cyprus[26] with an interest rate of 6, 25%.

Loan Amount	20.000,00 €
Annual interest rate	6,25%
Term of loan (months)	36
Monthly rate	0,51%
Payment	609,14 €
Total Amount Payable	21.929,19 €

In addition the director will transfer the following equipment (close to depreciation) to the new enterprise.

	**GPT-7500 series total station[27]** • Digital UHF or Spread Spectrum radio • Advanced Rugged System Design • Optional Internal GSM/GPRS/CDMA Cellular Communication • 72 Universal Tracking Channels • RTK 10Hz position and raw observation, 20Hz optional • Bluetooth Wireless Technology • G3 Satellite Tracking (GPS, Glonass, Galileo *(Technical description as written by GeoShack)*

[26] http://www.bankofcyprus.com.cy/Cyprus_Gr/Business_gr/Small-enterprises_gr/Financing_gr/Investment-loan_gr/

[27] http://geoshack.com/wp-content/uploads/2011/06/GTS-750.-GPT-7500-6455390052.pdf

	**Small UAV - Phantom 3 Pro[28]** It is capable of capturing 4k video and transmitting an HD video signal out of the box. The built-in camera has an integrated gimbal to maximize stability while minimizing both weight and size. Even when no GPS signal is available, the Vision Positioning System allows the aircraft to hover accurately in place *(Technical description as written by DJI)*

4.7 Monitoring strategic impact

Different factors of the external environment the company operates can influence and even disrupt the execution of the business plan of NO-GRAVITY. The management team of the company should consider carefully the opportunities and threats presented as will be also developed at the SWOT analysis in the sections below in order to capitalize into beneficial developments in the market as well as tackle threatening situations.

More specifically the biggest challenges the company will have to consider is the political and socioeconomic environment and the overall status of the Cypriot economy and especially of the sectors related to its activity. Political developments towards the unification of the island and the foreign investment plans to exploit the natural energy resources recently discovered will create great opportunities for new services. At the same time the volatile status of the European and Cypriot banking system, a possible slowdown of the economic activity in the island and the refugee crisis created by the ongoing War in Syria may influence the initial financial and operational plan of the company. A detailed analysis of the different factors that threaten or favour the company is analysed within section 4.3.10 SWOT Analysis

The following tools will be implemented to ensure successful implementation of the 5 year plan:

Decision making and resource management

[28] https://www.dji.com/phantom-3-pro

Inexpensive tools such as Google Analytics will be used for real time responses from the potential clients, adjust service weaknesses and minimizing human error. In addition to online tools, the company will consider to introduce ISO 9001 standards. Finally NO-GRAVITY will move all its desktop resource management operations to the cloud using a mix of free and subscription cloud services (data storage & computing).

Marketing and business growth

Inevitably and in order to minimize advertisement costs, NO-GRAVITY will rely heavily on Digital Marketing and especially search engine optimisation (SEO), pay per click (PPC), blogging, discussion forum, email shot, SMS, MMS, social media marketing and Smartphone app advertisement. It must be underlined that the company will establish its own social media accounts (Facebook/twitter/LinkedIn) and groups where services will be advertised and sample videos will be available.

Customer support and engagement

NO-GRAVITY management personnel is well aware that business success depends on knowing its customer's needs, trends, behaviours and satisfaction level, For that reason an online tool will be created where all customers will be able to trace the development of their project/service and an interaction panel will be online available. Social media posts of success stories (with the consent of the customer) will be disseminated and a yearly newsletter will be delivered online to all registered customers. Specific offers will be available (only for generation of multimedia content using UAVs) to recurring customers.

5 CONSCLUSIONS

This thesis attempted to respond to the question whether establishing a UAV services provision business in Cyprus, meeting the demands of the local market for aerial data, is profitable and sustainable considering the promising but uncarted ecosystem of drone related services that just emerges.

First of all, a thorough literature review of the business planning process in worldwide literate as a method was performed in order to obtain a better understanding on its

strengths and limitations. Findings from the literature research suggest that indeed business planning is helpful in the start-up process however it is unclear whether it is a safe tool to consider when the business is launched. Financial planning and value offering of business plan can be influenced at a certain extend sometimes can be by the funding institutions and evaluators. Despite the limitations the business planning process indicates this thesis uses all necessary analytical tools essential for a realistic business plan.

Analysis in the current state and prospects of the drone industry generated conflicting results as projections vary significantly affirming however that there are enormous prospects for growth until 2035 and steadily growth prospects through 2050 reaching up to $50 billion per year in related product and service revenues. According to the analysis made by SESAR (2016) in key demand areas such as agriculture, energy and security, the economic impact analysis of the entire value chain for each of the areas underlines the potential for a European market exceeding EUR 10 billion by 2035 and past EUR 15 billion annually by 2050). The overwhelming dominance of commercial and governmental value added services framed as "Drones-As-A-Service" concept is expected to represent the largest market opportunity in the value chain. The “Drones-As-A-Service" concept and the methodologies developed by SESAR (2016) report is widely adopted as a suitable business model for this business plan.

Trying to capture the financial potential of the target market a hypothesis is made that by applying projections of global UAV market growth to respective industry sectors in the Cypriot economy a market size and outlook for NO-GRAVITY can be established. An additional hypothesis that drone related services market in Cyprus will continue to grow as the general economy grows is made. Several application areas are examined, but specific focus is given to construction, real estate, agriculture, energy, mining, environment and recreation and education as the main areas that NO-GRAVITY can compete successfully.

As no reliable data, or market report exists for drone related service in Cyprus, a series of indicators were established to asses market potential such as trends in building permits and new buildings, evolution of farm holdings in terms of size, real estate contracts and prices, mining production and climate change challenges. Results from the target market analysis and competition fuelled the hypothesis that there is indeed economic prospect

for an innovative SME in drone services like NO-GRAVITY focusing primarily in construction, energy and agriculture.

Multiple sales forecasting scenarios are drafted and a moderate one is selected to construct the profit and loss projection of the proposed company and define the break-even point. The financial analysis indicates that Net income for the first year of operations is expected to EUR 4.900,00 after taxes while the coming year investment in equipment and labour (1 fixed wing drone and 1 additional employee) will drive net income at EUR 27.818,44. During the final year total income is expected to reach EUR 34.550,63. The break-even analysis indicates that the company needs to sign **31** contracts to break even and it will take **10, 3** months of operations to reach the break-even point taking into account that the company signs only 3 contracts per month on an average price of 2.266 €

Study limitations and trade-offs

As stated above certain trade-offs in the research design were made in order to reach to the conclusions of this thesis. It must be acknowledged that due to the small sample and nature of interviews, as semi-structured, the author recognises that a certain degree of bias might be present. Desk research of academic journals, interviews, case studies, market reports tried to enrich identified themes, patterns and relationships through the interviews. In addition further assumptions were made for the dynamic of each market segment for drone related services in Cyprus, as no clear indicator or previous study exists in this new market. Due to this fact the sales forecast presented in this thesis suffers also from a certain degree of bias.

Contribution and further research.

The business plan analysed within this thesis serves as a decision making tool to the individual that conceived the business idea to decide whether to establish NO-GRAVITY LLC or not. The industry, market analysis and financial plan clearly present elements of a growing and promising market opportunity for “drones as a service” offerings with the characteristics and competitive advantages of NO-GRAVITY. However, business decisions will be enhanced if further studies are conducted on establishing safe indicators for assessing customer willingness to pay for aerial data as well as trends of substitution of traditional services with UAV powered solutions.

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