

Going Public in Difficult Times

A Case Study on the Iridium Space SPAC

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Abstract

This case study finds that a special purpose acquisition company (SPAC) was utilized by Iridium Communications (Iridium) as alternative equity financing when all other options had been eliminated. SPACs present certain problems with warrants and dilution, but they are flexible in structure. The quality of the firm determines the SPAC returns, with low quality firms showing wealth-transfer qualities. In Iridium's case, when examining long-term returns, the SPAC was very successful due to the strong operational capabilities of the firm and the successful completion of its satellite project. The main conclusion to be derived, then, is that SPACs can be particularly useful to firms in need of financing in the absence of alternatives.

Keywords: Special purpose acquisition company (SPAC), Financial Crisis, Satellites

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1. Introduction

This paper attempts to answer when and why a Special Purpose Acquisition Vehicle (SPAC) would be an ideal financing vehicle for a firm. A SPAC, a special form of a blank-check company, is a company with no business operations created with the intention to raise capital via an initial public offering (IPO) to acquire, or merge, with a firm with existing operations. A high-level summary of the benefits and disadvantages of a SPAC will be explained from a theoretical perspective later in the introduction. The firm Iridium Satellite Communications (Iridium) and its 2009 SPAC-IPO with the private equity arm of the investment bank Greenhill & Co. presented an opportunity to analyze and generalize the different financing options available to firms and the unique role a SPAC can play as a solution.

This paper utilizes the case study methodology, including historical documentation, interviews with relevant parties, and academic literature, to pursue answers. Thanks to the generosity of Scott Bok (CEO and Chairman of Greenhill & Co.), Justin Cadman (Partner at Quilty Analytics), Matt Desch (CEO of Iridium), and Robert Niehaus (CEO, Chairman & Co-Managing Partner at GCP Partners and Chairman of Iridium), significant light was shed on the intricacies of the decisional processes and details of the transaction.

It is worth acknowledging that, as an anecdote, it would be a mistake to generalize Iridium's specific case to SPAC performance overall or the choice of financing. Hence, the focus is on the conditions that lead a firm to choose a SPAC as a method of financing. In Iridium's case, the main conditions were a previous bankruptcy, a reputation as a failed business concept, a board of directors and shareholder base with various and differing incentives, the global financial crisis, and high capital expenditure requirements with an investment horizon of approximately ten years. Despite such hindrances, Iridium prevailed. In 2021, Iridium generated \$614.5 million in revenue with an operating EBITDA margin of 61.5% (*Iridium Satellite Communications* - Annual Reports, 2021). With respect to generalization, one cannot truly disentangle what combination of the prevailing conditions resulted in Iridium choosing a SPAC and whether such combination would be applicable across firms. Given that establishing causation is impossible, the conditions should, instead, be viewed as pressures that remove other options (e.g., private equity and IPOs). The main conclusion to be derived, then, is that SPACs can be particularly useful to firms in need of financing in the absence of alternatives. Iridium, due to the various hindrances or "pressures" it faced, presents an excellent example of how and why a firm can find itself without options and how a SPAC can provide a solution. Again, this paper presents the view that such pressures can be generalized to further business cases, where the case, itself, cannot be.

Iridium is an American business that operates a constellation of low-orbit satellites which provide complete global coverage. Originally a Motorola project started in 1988, Iridium had launched 66 low-orbit satellites by 1998, with the intention of being a more efficient alternative to covering the earth in cell towers. By 1999, however, the business plan had faltered, and Iridium was forced into bankruptcy. An investor group led by Dan Colussy bought Iridium out of bankruptcy in 2000. A secured government contract was a significant contributor to the Collusy group's success. After surviving its bankruptcy, Iridium immediately faced a new challenge. Funding for IridiumNEXT, a new generation of satellites, was needed, with an estimated cost of \$3 billion. Cash from operations was available for a portion of the funding, but additional equity, in combination with debt financing, was needed (Bloom, 2017). The focus of this paper will be the source of equity financing, ultimately in the form of a SPAC.

At the time the SPAC was formed, Iridium was an operationally strong, profitable, and growing company. Iridium's topline had grown at a compound annual growth rate (CAGR) of 31% between 2002 and 2007, and operational EBITDA had increased at a CAGR of 87% between 2004 and 2007 (*Iridium Communications Inc. Acquisition Statement SC TO-C*, 2008). The business case was attractive, with government, maritime industry, and asset tracking customers. However, despite the attractive financial profile and a promising business case, Iridium faced constrained financing options. Given that Iridium had had a long and checkered past, including one of the largest bankruptcies in American history, investors were hesitant to invest. Moreover, Iridium's funding needs were related to significant capital expenditures with a long investment horizon. As an additional problem, Iridium's shareholder base and board members were growing contentious towards each other, with differing opinions on how to proceed. Furthermore, the 2008 financial crisis increased Iridium's financing constraints. No private equity fund nor strategic investor emerged as a genuine bidder, and due to market conditions, an IPO proved impossible. A SPAC presented an additional funding option.

SPACs emerged from blank-check companies in the 1990s, fulfilling the need for several shareholder-protecting features in the corporate structure due to widespread fraud in the generic blank-check market in the 1980s. Since their advent, these regulatory factors have continued to evolve, which explains why Cumming (2019) differentiates between four different generations of them (Cumming, 2019). Cumming would categorize Iridium as a second-generation SPAC, as its structure fulfills the criteria for the SPACs created between 2003 and 2009. A detailed description of the four generations of SPACs is found in the SPAC section of this paper.

SPACs have several unique advantages over a standard IPO. SPACs already have cash at their disposal, making them less volatile in market downturns. The cash on the SPAC's balance

sheet provides the additional benefit of giving the target company's shareholders a guaranteed way to cash out immediately at the time of the SPAC acquisition (J. Kolb and Tykvová, 2016). Regarding Iridium, a SPAC remedied the challenges the market conditions posed, because the SPAC had concluded its IPO prior to the global financial crisis. Additionally, the SPAC presented a solution that managed the different incentives for Iridium's shareholders. In addition, the process is faster because SPAC firms are not required to undergo the bureaucratic processes of SEC registration, since the SPAC shell company will have already done so. Roadshows are less complicated, and SPACs face less underpricing (J. Kolb and Tykvová, 2016). In Iridium's case, the roadshow still faced difficulties relating to investors' pre-existing views of the firm.

Furthermore, Gahng et al. (2021) also emphasized the sponsors as a main advantage, given that they can provide advice and add credibility to the firm. They also argue that SPACs provide more certainty regarding valuation because a long roadshow and book-building process to gather interest from investors, hence making the terms very uncertain, is no longer necessary (Gahng et al., 2021). In Iridium's case, SPAC sponsors invested significant amounts of their own money, and Robert Niehaus took the position of Chairman on Iridium's board post-SPAC-merger.

However, second-generation SPACs, such as the one utilized by Iridium, also had several disadvantages. Shareholders of the shell company had the power to vote against the approval of the merger. Additionally, the dilution of a SPAC company could be very high due to the large sponsor share and especially the warrants held by the SPAC sponsors. Furthermore, the perception of SPACs at that time was still tainted due to the history of blank check companies, which will be discussed later in the SPAC section (J. Kolb and Tykvová, 2016). The dilution effect was present in Iridium's case, and interviewees and documentation showed significant warrant overhang.

Contrary to common misconceptions, a SPAC is not a cheaper version of an IPO. Gahng et al. (2021) compared the costs of going public with a traditional IPO. Whilst a traditional IPO bears costs like those of underwriter commissions and underpricing, a SPAC also faces dilution costs, as mentioned by Kolb and Tykvová (2016). Gahng et al. concluded that merging with a SPAC is substantially more expensive than an IPO, "both in terms of the total cost as a fraction of the cash raised and as a fraction of the post-issuance market capitalization" (Gahng et al., 2021, p. 8).

In summary, operationally strong companies are excellent candidates for SPACs because they offer attractive returns for all investors. On the contrary, SPACs can also serve as wealth-

transfer vehicles for SPAC sponsors. Because of the SPAC structure, sponsor investors participate in the upside with 20% equity, for which they only pay \$25,000 (the sponsor “promote”), or a mere fraction of the equity value that they receive, effectively eliminating the downside. SPAC investors face significant dilution as they invest essentially 100% of the capital but receive only 80% of the equity. Gahng et. al (2021) analyzed the return characteristics of the different SPAC stakeholders, with primary focus on fourth-generation SPACs. SPACs generate median returns to sponsors of 81% and mean returns of 615 to 744% one year after the consummated merger. The Private Investment in Public Equity (PIPE) investors also generate, on average, 9.3% one year after the consummated merger. Initial SPAC investors, mostly due to the warrant, earned an average one-year return of 23.9% and a warrant-specific return of, on average, 72.2%. Investors who enter at the time of the merger suffer average losses of -11.3% over one year.

In Iridium’s case, Iridium’s share price performance between the SPAC merger and November 1st, 2022, was 463.96%. Unit returns (the share and the warrant) during the same period were 855%. Furthermore, this paper finds that firms must manage different stakeholders’ incentives and reach an optimal compromise under the present situation. Firms choose between funding options out of necessity. Iridium’s management pursued every possible combination of financing possible and chose a SPAC, because it was the only truly feasible option. Finally, SPACs can be viewed as a way of accessing “bull-market” financing in “bear markets” because SPACs can raise funds when investor sentiment is strong and deploy that cash at a later date when investor sentiment is weak. The use of a SPAC as a recession vehicle is apparent in Iridium’s case. Overall, and as alluded to earlier, the main conclusion of this paper is that SPACs can serve as a niche solution for firms when pressures constrict, or even eliminate, their possible financing solutions. Although a SPAC might not be the optimal financing alternative without constraints, it might be the only one available.

In the next section, the research methodology will be described. Sections 3 through 5 cover the competitive landscape, a brief history of the satellite industry, and the story of Iridium. Section 6 introduces the SPAC counterpart, Greenhill. To conclude the background, Section 7 covers the relevant SPAC fundraising. Section 8 explores the different funding options Iridium explored, primarily from the perspective of the interviewees. Section 9 explains the effects the global financial crisis had on IPOs, as well as mergers and acquisitions. Section 10 first thoroughly investigates the academic literature on SPACs and then applies the literature to the case of Iridium. Section 11 covers valuation. Sections 12 and 13 detail the ultimate SPAC IPO

and external views. Section 14, the epilogue, summarizes the launch of IridiumNEXT. Finally, Section 15 concludes this paper.

2. Case Study as a research tool

To answer the research question, the case study methodology, as laid out by Yin (2009), was chosen. The risk with case studies, and the reason they face some criticism, is that they can become anecdotal narratives from which no general conclusions can be drawn. However, Yin argues that case studies should not be viewed as “samples” but rather utilized to generalize theories. Case studies are more commonly utilized in the social sciences but have also found their way into economics because they can be used to make complex phenomena and real-life events understandable. The three major types of case study methods are exploratory, descriptive, and explanatory. Yin argues that the choice of method depends on the type of research question, the extent of the investigator’s control over actual behavioral events, and the degree of focus on contemporary—as opposed to historical—events (Yin, 2009).

A case study is the form a researcher should use when “a ‘how’ or ‘why’ question is being asked about a contemporary set of events over which the investigator has little or no control” (Yin, 2009, p. 13). Our research question is a how and why question and would, therefore, fit in the form of an experiment, history, and case study. The questions “how” and “why” are explanatory, thus leading to the type of case study used: an explanatory case study method. By examining the requirement of control over behavioral events, we can say that we did not have any control over the outcome of the results; therefore, an experiment can be also excluded. Hence, the only two methods left are the history and case study methods. These can be distinguished from one another through the focus on contemporary events. This is a bit difficult to analyze because the Iridium SPAC happened nearly fourteen years ago. However, Yin defines an event as historical when no person is left to interview, meaning that one can only rely on historical documents. Therefore, we determined that a focus on contemporary events was most appropriate (Yin, 2009), and the case study method was, therefore, established as the research methodology for this paper.

To understand the Iridium SPAC in detail, various relevant actors were contacted, of which four were generous with their time and willing to be interviewed. Interviews were conducted with Scott Bok (Chairman & CEO of Greenhill & Co.) once, Justin Cadman (at the time, an investment banker from Raymond James and partner at Quilty Analytics today) once, Matt Desch (CEO of Iridium throughout the SPAC until the present) twice, and Robert Niehaus (Chairman & Co-Managing Partner at GCP Partners and the Chairman of Iridium today) once. The table below summarizes the interviewees in alphabetical order.

Table 1: Interviewees

Interviewee	Company	Role
Scott Bok	Greenhill & Co.	Chairman & CEO
Justin Cadman	Quilty Analytics / Raymond James	Partner / Banker
Matt Desch	Iridium	CEO
Robert Niehaus	GCP Partners / Iridium	Chairman & Co-Managing Partner / Chairman

All interviews were one hour in duration and conducted via Microsoft Teams. The list of questions was predefined and adapted slightly depending on the interviewee's experiences and knowledge, as well as the flow of discussion. Software was utilized to transcribe the interviews.

We also wish to address some traditional prejudices against the Case Study Method. A case study may be a less desirable form of research because the approach may be less rigorous. This is potentially due to a bias in conducting the research, which can influence the direction of the findings and conclusions (Yin, 2009). This problem was addressed by using market data and research papers to build a theoretical foundation and then adding insights from the interviews and official documents to put the theories into context. Another frequent concern is that a case study is unable to offer scientific generalization. However, Yin notes that a case study does not represent a "sample." Rather, the goal of a case study is more to generalize theories and not to enumerate frequencies (Yin, 2009). This paper follows Yin's approach by, first, generalizing the SPAC theory and then adding specific information from the Iridium case, which should help put the theory into perspective.

3. The competitive landscape development

A complete overview of Iridium's history follows in the later sections of this paper. First, however, this paper will briefly explain the competitive environment into which Iridium's services were born. Finkelstein and Sanford (2000) explain, among other things, how changes in the competitive landscape affected Iridium. While such operational challenges are not the main subject of this paper, they are crucial to understanding, as they played a critical role in Iridium's ultimate bankruptcy. The bankruptcy, detailed in section 5.4, and the factors that caused it, resulted in negative investor sentiment. This negative investor sentiment subsequently constricted Iridium's financing options.

When Iridium was conceived, global telecommunication network coverage was thin, especially in developing markets. Iridium's inventors envisioned the Iridium satellite

constellation as an alternative to covering the world with cell towers at five-mile intervals. The investment thesis ultimately proved incorrect. During the constellation's concept to development phase, terrestrial cellular already covered significant portions of the globe, particularly international business hubs, cities where "international business travelers," Iridium's target customers, were likely to be (Bloom, 2017; Finkelstein and Sanford, 2000).

When Iridium was founded, the telecommunications industry, despite being a commonly used term, was an industry with parameters that were difficult to define (Botein and Pearce, 1988). According to Botein and Pearce (1988), the telecom space was comprised of several separate industries, including equipment manufacturers, transmission service providers, and software developers. The Iridium concept was born in 1988. Just three years earlier, in 1985, United States businesses and consumers had spent approximately \$100 billion on telecommunication services, or 2.5% of GDP (Botein and Pearce, 1988). By the time Iridium launched commercial services in 1998, the U.S. telecommunications market had grown at a compound annual rate of 11% and reached a market size of \$388 billion, or 4.3% of GDP. In a report published in 2000, the Federal Communications Commission ("FCC") concluded that such growth was driven heavily by communication infrastructure improvements. The report detailed the features of the telecommunications markets as competitive with falling prices, technological improvements which improved quality, and increasing availability (Federal Communications Commission, 2000).

The Iridium constellation was born into a vastly different world than the one in which it was conceived. As Finkelstein and Sanford put it, "terrestrial cellular had spread faster than the company had originally expected. In the end, cellular was available" (Finkelstein and Sanford, 2000, p. 4). Somewhat ironically, today, there are approximately 5 million terrestrial cell towers across the globe, with an estimated cost of \$1 trillion—a satellite solution would have been a much cheaper alternative (Bloom, 2017).

4. Satellites—a brief history and overview of the industry

For the purposes of this paper, a long and detailed history of the satellite industry is not necessary, but what is essential to understand is that the early history of satellites and their technological development thereafter cannot be separated from war and geopolitical conflict. Since its advent, the industry has been driven by government interests via funding and talent deployment.

Obviously, to launch a satellite into space, a powerful rocket is needed to reach the requisite escape velocity. Rocket technology was developed extensively during World War II,

and early U.S. rockets designed for space launches relied heavily on the Nazi V-2 rocket design. Before Iridium was even an idea, the space race fueled the first-ever satellite launch by the Soviet Union—*Sputnik*—in October 1957. Four months later, at the end of January 1958, the U.S., with Wernher von Braun (the man behind the V-2 rocket) leading the project, successfully launched the satellite *Explorer* (Bloom, 2017). And thus, the first hurdle for Iridium had been crossed.

After World War II, between 1948 and 1957, the U.S. government's annual budget for space and science increased from \$0 to \$100 million and peaked at \$7 billion in 1967. Between the launch of *Sputnik* and the moon landing in 1969, the U.S. spent about \$30 billion on science, space, and technology (Budget of the U.S. Government, 2017). Ronald Reagan's strategic defense initiative (SDI, or "Star Wars" satellite missile defense system), alone, received a budget of \$2.5 billion in 1986 (*LA Times*, 1985). While the program was ultimately scrapped, some of the technology developed for the program would later be utilized for the Iridium constellation (*Iridium Museum*, n.d.)

On the private side, throughout the early sixties, the first experimental satellites designed for communication purposes were launched by AT&T, RCA, and Hughes Aircraft. Fearing that space would become privatized, President Kennedy signed the Communications Satellite Act of 1962 and created COMSAT, a public company funded by the federal government (Bloom, 2017). Iridium would one day compete with COMSAT in the satellite phone market (Finkelstein and Sanford, 2000).

As a further example of government interests driving the industry, due to international pressure, INTELSAT was formed in 1964, with 61% owned by COMSAT and 39% owned by western European countries, Australia, Canada, and Japan (Bloom, 2017). In 1979, Inmarsat (another future competitor of Iridium) was formed by the International Maritime Organization, a United Nations specialized agency (*Inmarsat*, n.d.).

This paper does not aim to analyze governments' role in the space industry, but the background is essential to understand the industry environment in which Iridium operates. From offering amnesty to Nazi scientists, to providing capital, to forming companies and awarding contracts, government interests have played a significant role in the satellite industry, a theme that will appear later in the survival and revival of Iridium. The struggles Iridium faced due to the economic climate and its corporate governance structure are entangled with its competitors' and government interests.

5. Iridium—The story of the company

To understand the difficulties Iridium faced when raising capital for its new generation of satellites, it is important to cover its history and, especially, its checkered past. This was a firm with a battered and bruised history trying to convince investors that it was worthy. For better or worse, it was not a “black box” producing cash flow but, rather, an infamous firm. Potential SPAC investors were aware of this, too. Justin Cadman, an investment banker staffed on the transaction, recalled, “There was one investor, buy-side investor, who [was] well known for being very prickly and difficult, that actually almost for theater, pulled out a copy of the prospectus from like 1999, or whatever it was and [said], ‘what about these projections?’” (Justin Cadman, personal communication, 8 September 2022). Matt Desch commented, “He's [the investor] a very provocative, you know, funny guy, if he gets going. But he did [have the prospectus]. I don't know how he stored all this stuff, but you know, this is in 2008... For the original IPO on the New York Stock Exchange, you know, [that] prospectus must have been back in ‘96 or ‘97 or something. So, this is eleven years before. That's a long time. You know, for anybody, nobody even keeps that kind of paper usually, right, for all the deals that [they] went through over that time. But he not only kept it, but had the original prospectus and all that kind of stuff with the projections that they were showing for how many subscribers [Iridium would] have” (Matt Desch, personal communication, 23 September 2022).

“Phoenix rising” is a section in the Iridium Museum (*Iridium Museum*, n.d.) that astutely describes the scale of technological developments and the size of the bankruptcy, thereafter. Finkelstein and Sanford describe Iridium “as one of the most significant business failures of the 1990s” (Finkelstein and Sanford, 2000, p. 5). The Iridium bankruptcy is even a Harvard Business School case written by Esty, Qureshi and Olson (*Iridium LLC - Case - Faculty & Research - Harvard Business School*, n.d.). Simultaneously, Iridium represented extraordinary technological advances and required all of the might Motorola, at its arguable height, could muster to not only engineer, manufacture and launch, but to coordinate across the globe, manage geopolitical interests, and fend off competition at every step (Bloom, 2017).

5.1. Iridium as a Motorola project

In 1988, three Motorola engineers—Bary Bertiger, Ray Leopold and Ken Peterson—signed a document describing a “Global Personal Satellite Communications System” (this document now resides at the National Air and Space Museum in Washington, D.C.) and officially started the process of creating Iridium. The story goes that when Bertiger was on vacation in the Bahamas with his wife, Karen, she was unable to get a cell signal for an important call; she

encouraged him to find a solution. Whether or not there was a truly eureka moment, the team at the Motorola research lab in the Arizona desert proposed a constellation of satellites that could cover the entire globe rather than building cell towers every five miles (Bloom, 2017). In 1997, the first five Iridium satellites were launched from the Vandenberg Air Force Base in California (*Iridium Museum*, n.d.). On November 1, 1998, ten years after the project officially began, U.S. Vice President Al Gore made the ceremonial first call to Gilbert Grosvenor, chairman of the National Geographic Society and great-grandson of Alexander Graham Bell. Thus, the network officially launched its commercial service (Bloom, 2017). Robert Niehaus, Iridium's chairman and one of the people responsible for the SPAC, described Iridium's story as fascinating and stranger than fiction (Robert Niehaus, personal communication, 14 September 2022). Scott Bok, another person responsible for the SPAC, described himself as "quite enamored" by Iridium (Scott Bok, personal communication, 23 August 2022). Cadman said, "In an indirect way, [Iridium] had a very profound impact on my own career trajectory as well. And I think part of that is because that was just such a fascinating company and story" (Justin Cadman, personal communication, 8 September 2022).

5.2. Satellite constellation

Initially, engineers at Motorola thought that 77 satellites would be needed to provide complete coverage across the globe. Hence, they named the project "Iridium" after the element with 77 as its atomic number. Despite reducing the number of satellites to 66 (Dysprosium has an atomic number of 66), they kept the name (*Iridium Museum*, n.d.). The Iridium satellites were, and still are, low-Earth orbit (LEO), which means they are positioned only 485 miles above the Earth's surface, or ninety-eight percent lower than a typical geostationary satellite. Six strings of eleven satellites orbit Earth north-south in a staggered fashion at 16,776 miles per hour, providing coverage to the entire planet. The proximity to Earth allowed Iridium to provide calls with virtually no lag, relative to the half-second delay associated with a geostationary satellite (Bloom, 2017). When Iridium launched its commercial services in 1998, satellite phones were sold for \$3,000, and a call cost between \$3 and \$8 per minute (Finkelstein and Sanford, 2000). The Iridium LEOs were designed to function with just one Earth station that would process every call. Iridium's competitor Globalstar had a satellite constellation that would require numerous Earth stations to process calls. Despite the inefficiency, Globalstar coined the term "gateway" as a marketing tool that proved so successful that Iridium followed suit by building many more gateways than necessary (Bloom, 2017).

5.3. Corporate structure development

In June 1991, Motorola incorporated Iridium Inc. as a separate entity, with Motorola retaining 20.1% ownership. Other major shareholders included Vebacom, with 10%, Korea Mobile Telecommunications and Sprint Corporation, with 4.4% each, and STET, with 3.8% (*Iridium Museum*, n.d.). Two years later, Iridium signed a \$3.37 billion contract with Motorola to acquire the space system (*Iridium Museum*, n.d.) In addition, an operations and maintenance contract worth \$50 million per month was signed with Motorola (Bloom, 2017). In late July 1996, Iridium Inc. changed its corporate form to a limited liability company and became Iridium LLC (*Iridium Museum*, n.d.). Shortly afterward, in 1997, Iridium raised \$223 million via an IPO (Bloom, 2017). Iridium's 1997 prospectus outlines the ownership structures pre- and post-IPO, as shown below in Table 2. (*EDGAR Filing Documents for 0000950133-97-001776*, n.d.). There are two important things to note. First, the column on the right, "Principal Gateway Service Territory," shows which original investors owned Iridium gateways. As mentioned in section 5.2, ironically, the satellite constellation required just one earth station (or gateway) to function, but investors had been pitched gateways as a means of marketing the approximately \$200 million investment in equity and gateway facility construction costs. Second, Iridium Middle East Corporation was backed by Prince Khalid bin Abdullah Al Saud (Prince Khalid) from Saudi Arabia, who will come up again (Bloom, 2017).

Table 2: Iridium Ownership Structure

Investor	Pre-IPO	Post-IPO	Principal Gateway Service Territory
The Company	0.0%	7.2%	Not Applicable
Iridium Africa Corporation	2.5%	2.1%	Africa (excluding Morocco and Egypt) and Turkey
Iridium Andes	3.6%	3.1%	South America and Caribbean
Iridium Brasil Ltda.	2.3%	2.0%	South America and Caribbean
Iridium Canada, Inc.	4.3%	3.8%	North America
Iridium China (Hong Kong) Ltd.	4.3%	3.8%	China, Mongolia, Hong Kong, and Macau
Iridium India Telecom Limited	4.3%	3.8%	Indian Subcontinent

Iridium Italia S.p.A.	4.6%	4.0%	Certain countries in Europe including Belgium, Denmark, France, Greece, Italy, Luxembourg, the Netherlands, and Switzerland
Iridium Middle East Corporation	5.0%	4.3%	Middle East, Morocco, Egypt, and Central Asia
Khrunichev State Research and Production Center	5.0%	4.4%	Russia and other republics of the Commonwealth of Independent States
Korea Mobile Telecom Communications Corporation	4.3%	3.8%	North Korea and South Korea
Motorola, Inc.	21.8%	19.0%	North America, Mexico and Central America, South America, and Caribbean
Nippon Iridium (Bermuda) Limited	12.9%	11.3%	Japan
Pacific Electric Wire & Cable Co., Ltd	4.3%	3.8%	Indonesia, Brunei, Papua New Guinea, the Philippines, and Taiwan
P.T. Bakrie Communications Corporation	0.0%	5.4%	Certain countries in the South Pacific region including Australia and New Zealand
Sprint Iridium, Inc.	4.3%	3.8%	North America
Thai Satellite Telecommunications Co. Ltd.	4.3%	3.8%	Southeast Asia
Vebacom Holdings, Inc.	10.2%	8.9%	Certain countries in or near Europe, including Austria, Bulgaria, the Czech Republic, Finland, Germany, Hungary, Ireland, Israel, Norway, Poland, Portugal, Romania, Spain, Sweden, Slovakia, Ukraine, and the United Kingdom
Lockheed Martin Corporation	1.2%	1.1%	Not Applicable
Raytheon Company	0.8%	0.6%	Not Applicable

5.4. Bankruptcy

Including debt, Iridium had become a \$6.442 billion investment. Bloom describes it as “the most expensive start-up in the history of American business” (Bloom, 2017). Within months of its the November 1998 launch of commercial service, by April 1999, Iridium’s business plan was faltering fatally, with only ten thousand customers (and \$50 million in operations and maintenance expenses, alone, paid to Motorola each month). On August 13, 1999, Iridium became one of the twenty largest bankruptcies in U.S. history when it filed for Chapter 11 protection (Finkelstein and Sanford, 2000). The scale and speed of Iridium’s downfall (the stock price crashed from a high of \$72.19 in May 1998 to \$3.06 when Iridium declared bankruptcy, and NASDAQ halted trading) made Iridium infamous, and thousands of articles have been written about its failure (Finkelstein and Sanford, 2000). Motorola was determined to de-orbit the satellites and be done with them once and for all (Bloom, 2017). John Bloom’s book *Eccentric Orbits* describes the story of Iridium’s bankruptcy in great detail. Iridium also became a Harvard Business School case. For the purposes of this paper, its bankruptcy is important for reference and to highlight why investors were skeptical toward Iridium, which would pose additional funding constraints later. Matt Desch described the situation: “You know, [when] the company came out of bankruptcy, it was very toxic at the time because it was such a major kind of bankruptcy at the time. It was such an embarrassment for Motorola. There weren't a lot of companies [interested in Iridium], especially during the downturn in 2000 of the Internet and wireless and the bubble that had burst, so it got it bought for literally like \$25 million, and an important part of this is, by the way, the investors didn't even have \$25 million. I think they put in like \$15 [million] and took a note from Motorola that I mean that's literally how little was involved.” (Matt Desch, personal communication, 15 August 2022).

5.5. Saving Iridium

Matt Desch’s memory served him well, and the price to buy Iridium out of bankruptcy was, indeed, around \$25 million, despite the assets having been valued at approximately \$6 billion (*Iridium Museum*, n.d.). However, the investors only put down \$6.5 million, the remaining \$18.5 million was borrowed in exchange for a 5% stake in the new company. Dan Colussy, a former United Nuclear Corporation, Canada Pacific Airlines, and Pan American World Airway executive, led the buyout group. The investor group, which would also provide the funding for business operations until Iridium became cash flow positive, comprised Prince Khalid, Syncom

Capital, a venture capital fund run by Herbert P. Wilkins, Sr., and Terry Jones, as well as smaller Australian and Brazilian investors (Bloom, 2017).

The biggest roadblock to buyout was Motorola's insistence that it receive complete and perpetual indemnification for any lawsuits related to the satellites. No matter the amount of insurance Colussy arranged, it was never enough from Motorola's perspective. After countless threats from Motorola and numerous scheduled de-orbit dates, it ultimately required a signed letter from Secretary of Defense William Cohen stating that Iridium would "facilitate the national defense" to appease Motorola. The statement enabled Public Law 85-804 to be invoked and indemnify Motorola. A government contract worth \$72 million provided a consistent revenue stream from the most reliable of stakeholders and helped Colussy to convince investors. Without the U.S. government's involvement, it is very likely that the Iridium constellation would have been de-orbited, its satellites plummeting down to Earth. (Bloom, 2017). On the November 26, 2000, the bankruptcy court approved the purchase (*Iridium Museum*, n.d.), and Colussy signed a deposit check of \$1.5 million, using his own funds (Bloom, 2017). On March 30, 2001, Iridium relaunched its commercial service (*Iridium Museum*, n.d.). Iridium's LEO satellite constellation was never widely adopted by the international business traveler as Motorola had planned. However, it became indispensable for asset-tracking across industries, to the maritime industry, and the U.S. military. By the end of 2005, Iridium generated its first profits (Bloom, 2017).

5.6. Matt Desch arrives—IridiumNEXT

From the outset, Colussy wanted Edward Staiano, the original Iridium CEO, to return and retake the role of CEO. However, by that time, Prince Khalid and his representatives were so displeased with Motorola, and anyone who had been employed by Motorola, that they threatened to walk away from the deal if Staiano was anywhere involved. The U.S. government was also, by that time, severely displeased with Motorola and had, thus, forbade them from owning any equity in the new company (Bloom, 2017). Over the next five years, Iridium would have five different CEOs. In late September 2006, Matt Desch joined as CEO and was the person responsible for leading Iridium through the SPAC (*Iridium Museum*, n.d.). Desch had experience from Bell Labs, Nortel Networks as head of wireless, and as CEO of Telcordia Technologies. Before offering him the job, Colussy told Desch, "You must believe that there can be a next-generation Iridium system. You will need to find \$3 billion for the next generation of satellites. And that may be conservative. Some people are telling me \$4 billion" (Bloom, 2017, p. 457).

5.7. The need for Equity—Fundraising in the global financial crisis

Thus, IridiumNEXT, as it was called, was estimated to cost between \$3 billion and \$4 billion. Due to the limited lifetime of the satellites, a new generation had to be built and sent into orbit. Desch explained that “[he] had a separate team working on that [the funding] and trying to figure out what would that cost. They came to me first... and they said it'll cost \$4 billion, and we're going to make it all ourselves. And I said no, it's going to cost \$2.7 billion, and we're going to let the industry build it.” After negotiating with industry players, such as Lockheed Martin and Thales Alenia Space, Desch expected the cost to be about \$3 billion. To fund the new generation of satellites, Desch expected to generate about \$1 billion in cash from the company’s operations, offer hosted payloads, and maybe even an IPO. He said, “The concept of a hosted payload was still pretty new. In fact, we were even kind of generating a whole industry momentum around hosted payloads. Don't build your own network, use somebody else's, and piggyback on them. So, I thought we'd make about \$500 million out of that. So, you know, between our money, the cash flow, [an] IPO, maybe about a billion dollars, you know we were coming up with about \$3 billion kind of plan and that's what we were pitching until of course 2008 happened” (Matt Desch, personal communication, 15 August 2022). Apart from the need for capital expenditure financing, members of the investor group were growing contentious toward one another, incurring personal tax liabilities, due to the LLC structure, and searching for an exit. When a potential merger with Inmarsat fell through, many of the investors were ready to take cashouts, permit the Iridium satellites to live out their useful lives, and let the company die. (Bloom, 2017). Desch engaged Michael Price, from the investment bank Evercore, to advise on funding options (Matt Desch, personal communication, 15 August 2022).

6. Introduction to Greenhill

Greenhill & Co. became an important actor in this case. It was founded in 1996 and is an investment bank that provides mergers and acquisitions, restructuring, financing, and capital advisory services. Robert F. Greenhill and Smith Barney established the firm, and in 2004, Greenhill went public (*Greenhill History | Greenhill & Co*, n.d.). Greenhill Capital Partners, a private equity fund, was founded as a part of Greenhill in 2000; and in 2009, changed its name to GCP Capital when it was spun-off (*GCP Capital Partners – About*, n.d.). As Niehaus described it, GCP Capital invested across sectors in “financial services, telecom, tech-enabled business services and energy. But two of our better deals were telecom and that kind of opened

my eyes... Cell towers [were] a great example of that.” He was clear that he viewed cell towers as telecom investments, “I said I was interested in telecom. I’ve never invested in utilities” (Robert Niehaus, personal communication, 14 September 2022).

7. SPAC fundraising

On November 30th, 2007, Greenhill filed an S-1 form with the SEC to take GHL Acquisition Corp public under the ticker GHQ.U and sell 40 million units comprising one share of common stock and one warrant for a total of \$400 million (SEC, 2007). The final prospectus, dated February 14th, 2008, outlined the SPAC’s investment scope as not limited to a particular industry but rather a business in either United States or Europe with significant growth prospects. Furthermore, as of that date, GHQ.U had twenty-four months to consummate a business combination or be forced to liquidate the company and return the cash to its investors (SEC, 2008b). On the SPAC IPO, Bok said, “Ultimately, we were able to do it with flying colors... it was only a few weeks later that Bear Stearns failed, and that really was kind of the end. So, I think we literally might have been the last, or one of the last SPAC IPOs, to get completed in that cycle. We then turned immediately to what are we going to do with this money” (Scott Bok, personal communication, 23 August 2022).

8. Different equity options explored

This section will outline the Iridium’s potential options for raising the equity necessary to finance IridiumNEXT and provide an exit for its current investors. Despite total subscribers growing at a CAGR of 33% between 2002 and mid-2008, revenue growing at 31% CAGR between 2002 and 2007, and operational EBITDA growing by 87% CAGR between 2004 and 2007 (*Iridium Communications Inc. Acquisition Statement SC TO-C*, 2008), Matt Desch, the Iridium team, and the team at Evercore faced significant challenges in their attempt to raise capital. As Cadman noted, it is “only barely an overstatement to say that people would practically hang up the phone if they heard the word satellite at that point in time” (Justin Cadman, personal communication, 8 September 2022). As the vehicle of interest in this paper, SPACs will be explored in detail in the following section. Hence, only the alternatives will be examined in this section.

8.1. IPO

On the surface, Iridium seemed like a perfect IPO candidate. By tapping public equity markets, Iridium could fund Iridium NEXT with capital that was not investment horizon-sensitive. If investors decided they wanted to exit their investment, they could simply sell their shares. Further, an IPO presented Iridium's existing shareholders with both an exit option and the option to remain shareholders. Desch said that if he could have done a traditional IPO, he probably would have. But due to market conditions discussed in depth later, the IPO market was essentially closed. He went on to say that Iridium could not afford to wait for the market to reopen. The Iridium NEXT constellation needed to be funded so the manufacturing process could begin. (Matt Desch, personal communication, 15 August 2022). Thus, Desch and his team turned to alternatives.

8.2. Private equity

Private equity could have been a solution for Iridium's equity needs but for two main problems. The first was an investment horizon problem, and the second was that Matt Desch was sensitive to the type of investor base this would attract. The most serious investor was John Castle from Castle Harlan, who had shown interest in the company for a long time and had even been very close on numerous occasions to joining Dan Colussy and becoming part of the group that bought Iridium out of bankruptcy (Bloom, 2017). Desch described John Castle's attitude as: "I'm John Castle and everybody loves me and respects me. I'm sure I'll be able to find more money and maybe take you public and I can be your new daddy, you know? And it'll be great" Desch went on to say he knew quickly that he didn't like the option but admitted that the choice was ultimately the board's (Matt Desch, personal communication, 23 September 2022).

With respect to the investment horizon problem involved in trying to raise capital from private equity investors, Bok said that Iridium needed "something like private equity, but very long term." Iridium needed approximately ten years to build and launch the new satellite system, which in Bok's view, private equity could not tolerate (Scott Bok, personal communication, 23 August 2022). Niehaus presented a similar view and explained that Iridium was not projected to become cash positive until after it had launched the new generation of satellites. He went on to explain that most private equity funds need to be able to exit, or at least be able to see an exit, within five years. This means, generally, that the company is profitable, and the private equity investor's plan has come to fruition. In Iridium's case, the timeline was more like eight to ten years, and "[Iridium] just was kind an orphan" (Robert Niehaus, personal communication, 14 September 2022).

Market conditions, discussed in detail later, further decreased the probability of finding a private equity investor. Desch recalls numerous meetings with hedge funds and private equity funds, including renowned names like Madison Dearborn and TA Associates, but “none of them were making offers. You know, at that point, particularly after the 2009 downturn, it was really clear that most of them were really not interested because... it was a very downturn time for them, and they were probably, as one person said, [thinking] you could buy banks on the cheap. Why would you want to buy a satellite company that needed a lot of debt, you know, and capital?” (Matt Desch, personal communication, 23 September 2022). Hence, a private buyout, while intensively explored, did not materialize into a viable option.

8.3. Venture capital

The possibility of working with a venture capital firm only came up in one interview, but as a tangent rather than a realistic possibility Iridium had explored in depth. As mentioned earlier, Bok said that Iridium needed “something like private equity, but very long term.” He went on explain that, while venture capital investors have a longer-term view, they do not invest in businesses like Iridium. Venture capital investments focus on startups, where most, if not all, of the value is in the future potential. In contrast, Iridium was a business with a long and checkered past (Scott Bok, personal communication, 23 August 2022). The reader may recall that Syncom Capital, one of the investors in the bankruptcy buyout group, was a venture capital firm. Why a venture capital fund would be interested in a bankrupt firm, but not interested in funding a new generation of satellites, is a fair question. However, based on interviews and documentation, this paper concludes that venture capital was never really on the table for Iridium.

8.4. Strategic investor

As mentioned earlier, prior to Matt Desch’s appointment as CEO of Iridium, the company had been in dialogue with Inmarsat regarding a merger. According to Bloom, as of August 2004, there were ten teams working on the transaction, but by October of the same year, the deal had died (Bloom, 2017). Later, according to Desch, Inmarsat would attempt to derail Iridium’s fundraising by acting as though it were, once again, interested in a merger. The Board wanted every option thoroughly evaluated, so Desch obliged. He relayed “frankly, if [the board] had any compassion for the CEO at the time, they would have said that [it] would be a distraction... But instead I had this group of investors... say ‘I don't know, maybe they have an idea. We should listen to them’... And so I had to go through and fly up to New York and spend a whole

day of my life on that, which was a waste of time [in the] big scheme of things.” (Matt Desch, personal communication, 23 September 2022) In general, the market was still skeptical of Iridium and its technology (Bloom, 2017), and no strategic buyer appeared with an offer.

8.5. Board fights and SPAC as the only option

Desch describes the atmosphere in which Iridium’s Board of Directors was trying to find a solution: “This was a board that was a little contentious with each other. They had had a board fight just as I was stepping in over sort of the conduct of one of their shareholders. There were lawsuits. They didn’t like each other.” (Matt Desch, personal communication, 15 August 2022) In particular, the structure of the board created a difficult environment for finding a solution. More investment bankers and advisors were brought in by the different board factions, which added further complexity. Two shareholders, Prince Khalid, represented by his family office, Baralonco, and Syncom Capital, had negative rights. In other words, veto rights. Both large shareholders had to agree, and their incentives did not align. Prince Khalid was happy to invest in the long-term prospects of Iridium, whereas Syncom Capital was eager to exit (Matt Desch, personal communication, 23 September 2022). According to Bloom, the board actually wanted a clean exit rather than a SPAC. No stone was left unturned, and every option was thoroughly and time-intensively investigated. The Board even pushed Desch to consider a combination buyout where Castle Harlan and Greenhill would collaborate (Bloom, 2017). However, Desch explained that the two firms were like “oil and water” (Matt Desch, personal communication, 23 September 2022), and, thus, the collaboration fell through. Castle Harlan was offered a last chance to commit to the full deal but failed to give an answer in time, and without a legitimate alternative, the Greenhill SPAC was the best and, essentially, only real option (Bloom, 2017). In summary, due to its failure to consummate the Inmarsat merger, the closed IPO markets, and the poor fit for private equity or venture capital, Iridium was left with the SPAC option. The following section will explore the effects the global financial crisis had on IPO markets, SPACs, and their application in Iridium’s case.

9. The effects of the global financial crisis on IPOs and mergers and acquisitions

Iridium announced its merger with the Greenhill SPAC on September 23, 2008, (‘Greenhill & Co. SPAC to Combine with Iridium, A Leading Provider of Voice and Data Mobile Satellite Services’, n.d.)—eight days after Lehman Brothers declared bankruptcy, which was the “official” start date of the global financial crisis (GFC). If equity issuance had been difficult before, it had become even more complicated. This section shines a light on the GFC and the

effects the crisis had on the IPO and M&A markets. This theoretical knowledge will then be set into context with the Iridium case.

9.1. Background on the GFC

Many factors led to the financial crisis, and even today, it is not clear what the main reason for the crisis was. In their paper, Gorton and Metrick (2012) summarized several studies to explain certain factors underlying the financial and, in particular, the banking crisis. One key reason for the banking crisis was an accelerated increase in debt in the years leading up to it. Reinhart and Rogoff (2011) found that external debt increased sharply, in the years before 2007, before the banking crisis erupted (Reinhart and Rogoff, 2011). In the case of the GFC, the credit boom took place in the form of asset-backed securities (ABS), especially mortgage-backed securities (MBS). This was possibly due to an increase in shadow banking, which allowed for securitization with fewer regulations than traditional banks (Gorton and Metrick, 2012). “Securitization [is] the sale of loan pools to special purpose vehicles that finance the purchase of the loan pools via issuance of asset-backed securities in the capital markets” (Gorton and Metrick, 2012, p. 135). These ABS were mainly acquired by institutional cash pools, which required insured deposit alternatives. The ABS were good alternatives to U.S. Treasury bonds, which were of limited supply in the market and, therefore, had high prices and offered low yields. This was exacerbated by the inflow of capital into the U.S. economy from foreigners seeking U.S. assets as a method of warehousing value. This increase in demand for ABS was one reason for the credit boom in the housing market, which led to the lowering of standards for mortgages, especially so-called subprime mortgages, which, in turn, drove the housing prices, and created a housing bubble in the years before the crisis (Gorton and Metrick, 2012).

When the housing bubble started to burst in 2007 and defaults increased, the crisis spread through the financial system with the emergence of a credit and liquidity crunch. At the beginning of 2008, Bear Stearns, a large investment bank, went bankrupt, followed by Lehman Brothers in September 2008, and the insurer AIG, which tumbled the world into the financial crisis and deep recession (R. W. Kolb, 2010).

9.2. Distinction between “hot” and “cold” IPO markets

IPO volume fluctuates over time, which was first noted by Ibbotson and Jaffe (1975), who created the term “hot” IPO market (Ibbotson and Jaffe, 1975). However, the paper could not explain the underlying reason for such fluctuation. Helwege and Liang (2004) describe hot

markets as having a high volume of offerings, severe underpricing, frequent oversubscription of offerings, and sometimes, concentrations in particular industries (Helwege and Liang, 2004). Cold markets tend to move in the opposite direction. Lowry (2003), in his study, boiled it down to three different hypotheses:

1. IPO volume varies with the business cycle because, economy-wide, the demand for capital is higher; hence more companies are going public.
2. Variations in IPO volume stems from changes in investor optimism.
3. Varying investor uncertainty causes higher asymmetric information, which leads to a fluctuating IPO volume.

These three hypotheses are not necessarily mutually exclusive and can correlate with each other. Lowry concludes that the IPO volume is positively related to the equity demand of companies and the level of investor sentiment. In addition, a successful IPO is more likely when asymmetric information is lower (Lowry, 2003). This argument was further supported by Yung et al. (2008), who noticed that positive shocks lead to more firms going public due to an increase in capital productivity, which fuels demand for more capital. Due to this boom in IPOs, greater numbers of lower-quality firms go public, increasing the asymmetric information for which investors want to receive higher underpricing discounts (Yung et al., 2008).

9.3. The effect of the financial crisis on the capital raising market

One reason for a hot IPO market turning cold is a financial crisis, which is what occurred between January 2008 and March 2009 in the U.S. IPO market. From mid-August 2008 until March 2009, only two new issues came to market (Henry and Gregoriou, 2013). This can be seen in Figures 1 and 2 from Statista, showing the volume and the number of IPOs between 1999 and 2021 and 2000 through 2021, respectively. While the IPO market peaked, in terms of volume and numbers, in 2007, it fell by nearly 46% in volume and decreased by 80% in terms of numbers, which persisted at very low levels through 2009 (*Number of IPOs in the U.S. 1999-2021*, n.d.; *Size of U.S. IPOs 2000-2021*, n.d.). Boeh and Dunbar (2014), however, found that the graph does not tell the full story of the IPO market health. Whilst fewer IPOs were completed during the financial crisis, the pipeline remained strong. The dollar value per IPO in registration did not drop, indicating that issuers had chosen to wait out the downturn (Boeh and Dunbar, 2014).

Figure 1: Value of initial public offerings (IPOs) in the United States from 2000 to 2021
(in billions of U.S. dollars)

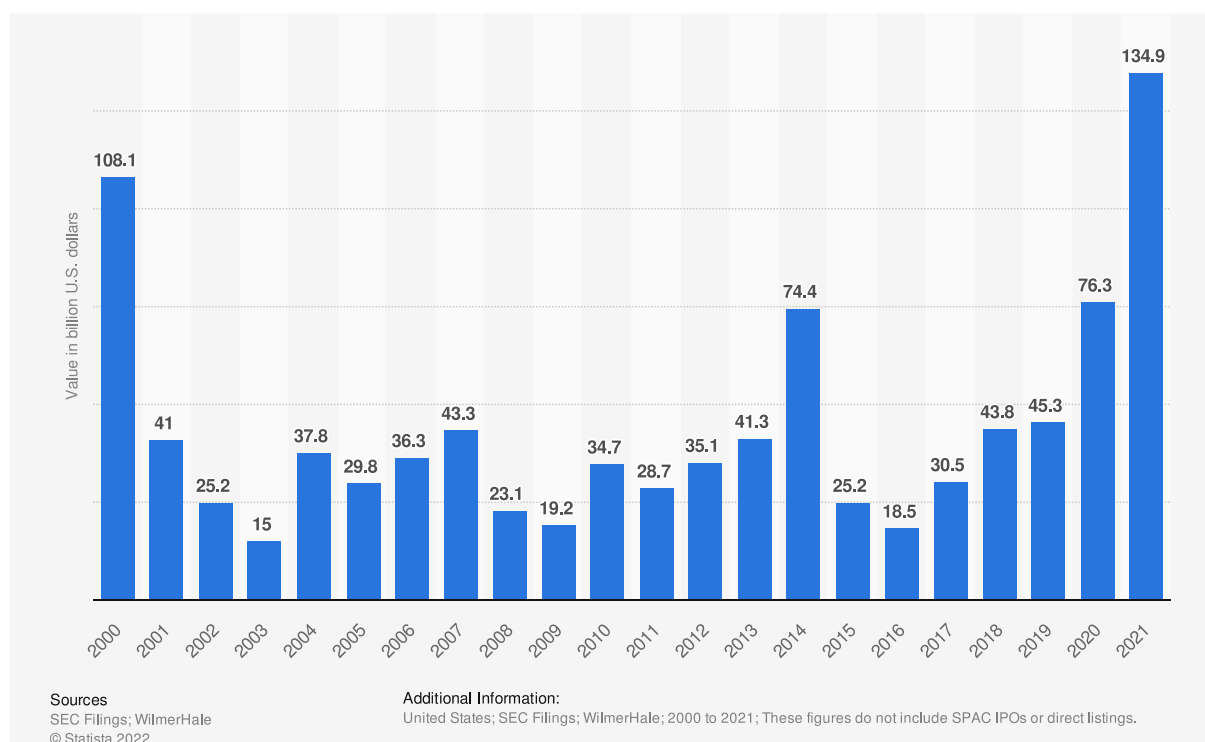
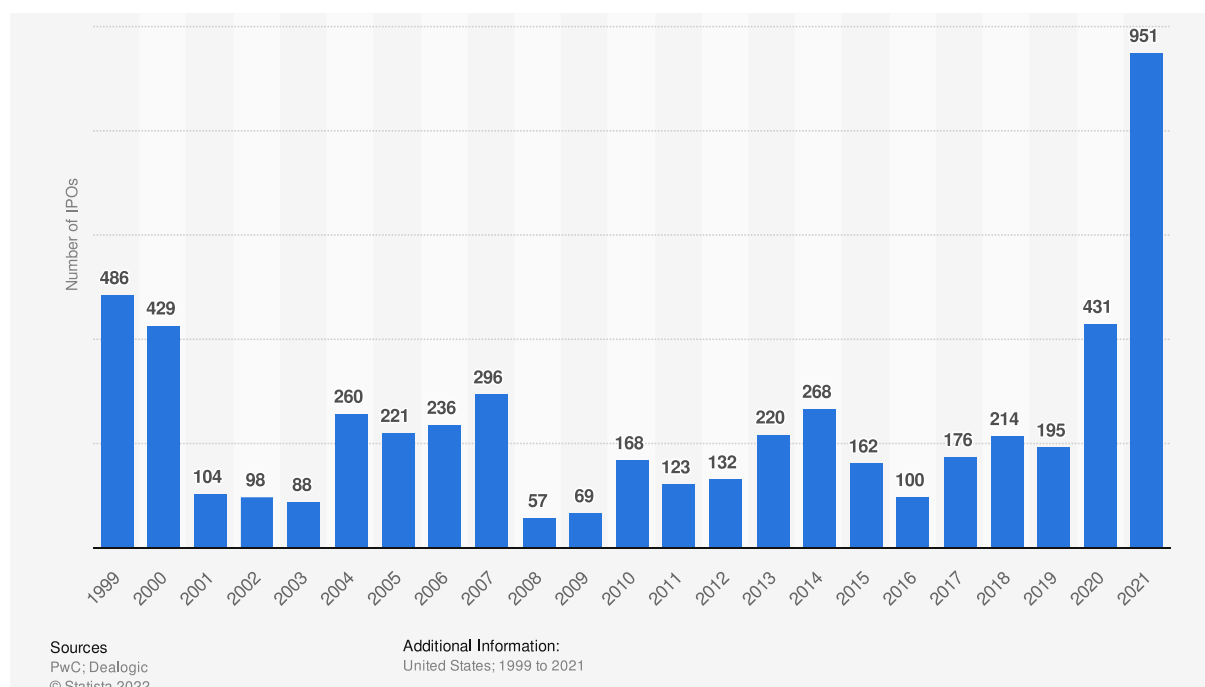


Figure 2: Number of IPOs in the United States from 1999 to 2021



In looking at Figures 3 and 4, from Statista, which show the number and volume of SPACs, respectively, created from 2003 through 2022, the data indicate that a certain kind of correlation exists and that the waves of SPACs tend to follow the IPO waves (*Number of SPAC IPOs in the U.S. 2022, n.d.; Size of SPAC IPOs in the U.S. 2022, n.d.*). SPACs are competitors

in the IPO market. High interest in IPOs during “hot” markets will reduce a SPAC’s ability to raise capital. On the other hand, investor demand is also higher during such years; therefore, it is quite difficult to distinguish between these two effects (Lakicevic et al., 2014).

Due to the countercyclicality, a successful SPAC merger may be more likely in volatile markets. Lewellen (2009) notices that SPAC volatility is low. Hence, higher market volatility transforms a SPAC into a “safe haven” for investors, since they are risk-free assets. This is due to the structural features of a SPAC, which is required to hold IPO proceeds in an escrow account with risk-free assets (S. M. Lewellen, 2009). This is especially true before merger with the operating company. The structural features of SPACs will be discussed in detail in the SPAC section.

Lakicevic et al. (2014) further bolsters the argument that investors consider SPACs as substitutes for underperforming financial assets in volatile markets (Lakicevic et al., 2014). Kolb and Tykvová (2016) also compared the likelihood of a SPAC merger with an IPO, lending support to Lewellen’s argument. By analyzing market variability, Kolb and Tykvová (2016) found that, compared to SPAC acquisitions, firms face more difficulties when trying to access the public market through an IPO when the market is volatile. In addition, they argue that the cost of debt is crucial because a higher cost of debt is correlated with a lower likelihood of a SPAC merger (J. Kolb and Tykvová, 2016).

Blomkvist and Vulcanovic (2020), in a more recent study, however, claim that SPACs, as a more opaque investment, due to a lack of operational history, are negatively affected by higher volatility in the market. The reason for that is that investors’ risk aversion levels increase with higher volatility. However, if SPAC sponsors hold a more significant number of warrants, which can be seen as a signaling mechanism to attract investors, the negative effects can be circumvented (Blomkvist and Vulcanovic, 2020). This particular feature was not tested in Lakicevic et al. and could be a reason why investors tend to invest in SPACs as a substitute for other assets. It should be further noted that SPACs of different generations had different features (discussed in detail in the SPAC section) which could make it difficult to compare results between different years.

Figure 3: Number of special purpose acquisition company (SPAC) IPOs in the United States from 2003 to October 2022

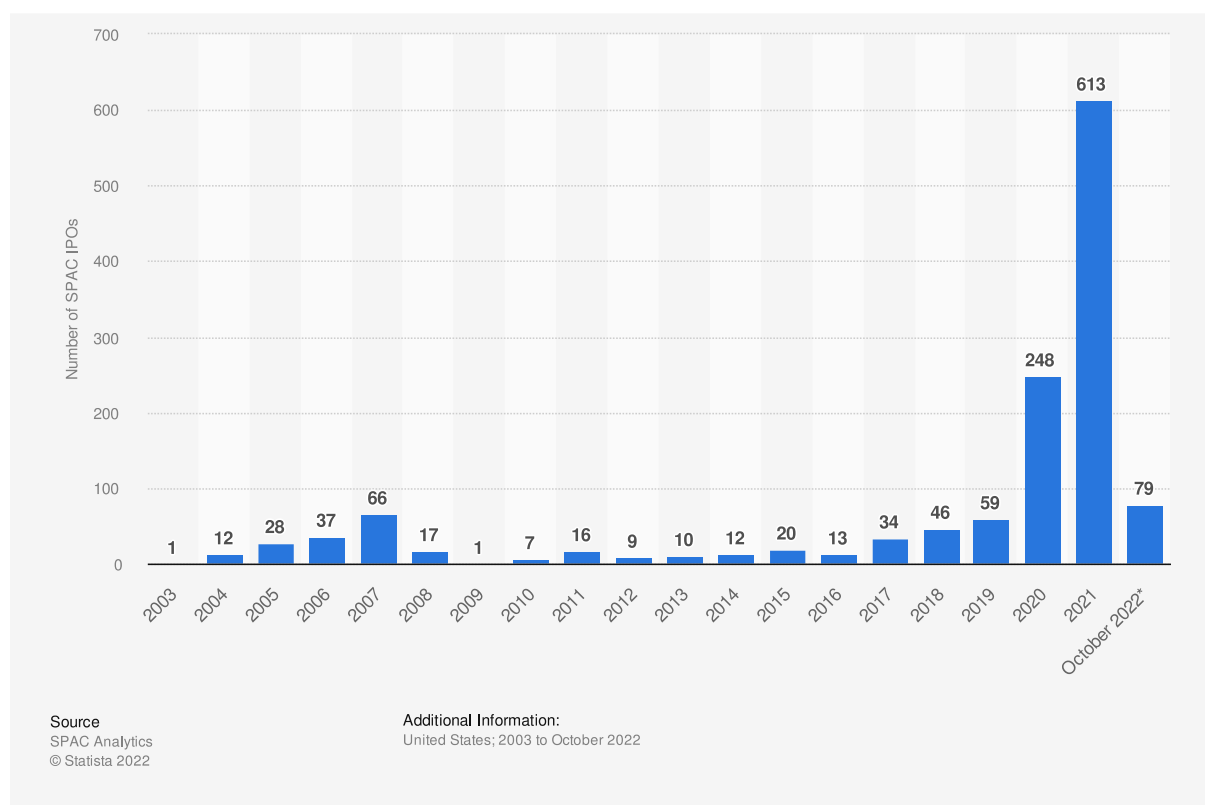
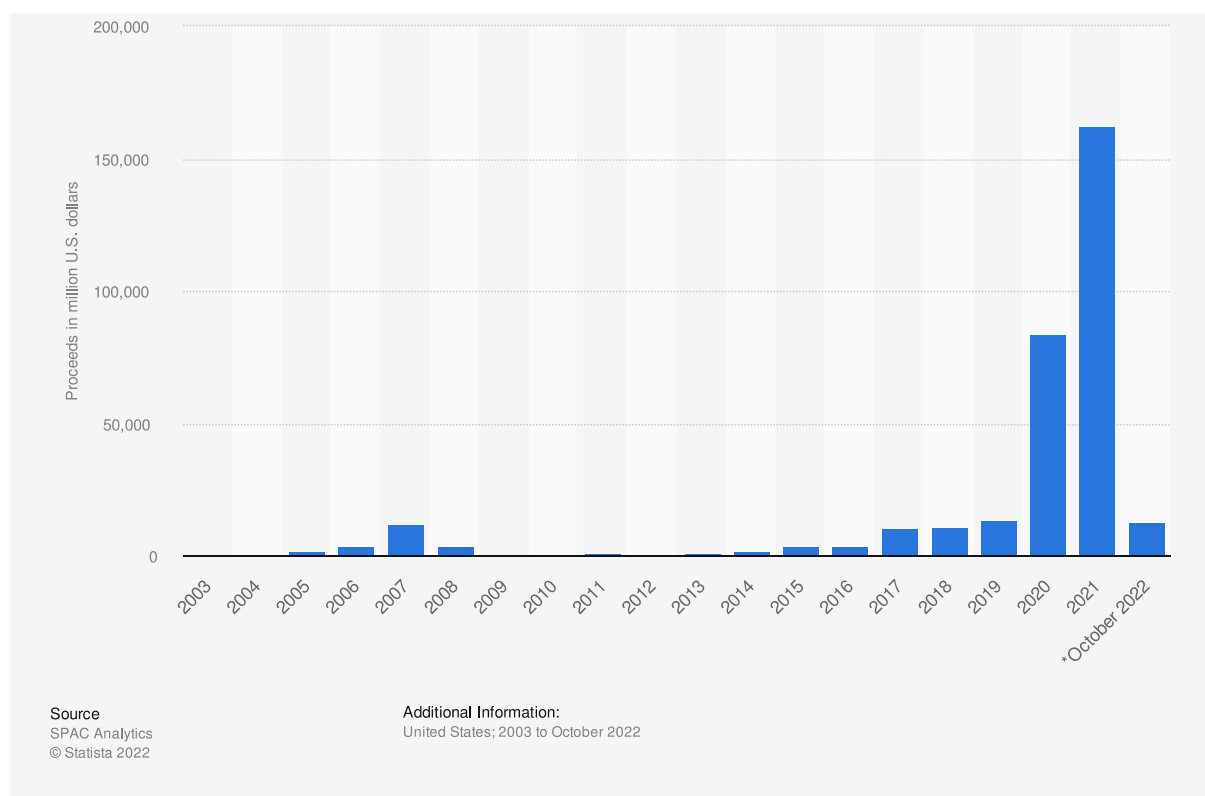


Figure 4: Proceeds of special purpose acquisition company (SPAC) IPOs in the United States from 2003 to October 2022 (in million U.S. dollars)



9.4. The application to the case of Iridium

Now, after establishing the theoretical framework behind the timing of Iridium's SPAC-IPO, as well as the characteristics of the IPO market, the specifics for the case of Iridium can be fleshed out. Firstly, the rationale of Iridium's SPAC-IPO will be discussed and compared with the theories of the IPO waves and the comparison to the SPAC characteristics. Then, the effect of the financial crisis on the decision to go public will be discussed.

As Matt Desch pointed out in the interviews, he wanted to grow the company, and, therefore, it needed to set up a new satellite constellation. Since it would require considerable debt financing to deploy the new satellites, he had the idea that more cash and a stronger balance sheet would help. "I think at that point I sort of thought we'd be able to come up with about a billion dollars of our own money. You know, so the original idea was [that] we probably need about another billion. [...] Between our money, the cash flow IPO, we were coming up with about \$3 billion kind of plan, and that's what we were pitching until, of course, 2008 happened." (Matt Desch, personal communication, 15 August 2022) Hence, the conclusion can be drawn that Iridium does not fit with the hypothesis regarding IPO waves. For Iridium, the IPO was more dependent on a large investment in their new satellites, for which reason they needed a stronger balance sheet. It could be argued that the capital expenditure was necessary because the economic upturn in the years before required more investment, but for Iridium, this was not the case since, the satellites had a limited life span and investment was, therefore, absolutely crucial for the company—and independent of the business cycles. In addition, the largest and most important customer of Iridium was, and still is, the U.S. government, further indicating a certain level of independence from the normal business cycles.

In the end, Matt Desch went with Greenhill to complete a SPAC merger, which was announced a week after Lehman went bankrupt. As Scott Bok, the CEO of Greenhill put it: "We started our roadshow on the day that Morgan Stanley and Goldman Sachs became regulated banks in order to survive. [...] The whole basis of credit, normal borrowing and funding and raising equity was very much uncertain at that time." For him, it "was one of the hardest things [he] has ever done in [his] quite long career at this point" (Scott Bok, personal communication, 23 August 2022). This shows how difficult it was for the persons involved to be successful with this merger, including long roadshows and giving up warrants to "sweeten the deal" for investors.

Although this demonstrates the difficulty of raising capital in times of financial distress, it also shows that it is still possible to do so. The SPAC, as a form of raising capital, may even have been the optimal choice for Iridium at that time, because the capital was already raised.

Nevertheless, the SPAC investors had to be convinced that Iridium was the right company for the merger, which was, in the end, successfully accomplished. This lends further support to the hypothesis that a SPAC-merger in volatile markets is easier because a SPAC developing in such times is a risk-free asset. The capital was raised and invested in a safe escrow account. Robert Niehaus would agree with this hypothesis as well, as it was one of the reasons to set up a SPAC in the first place. According to Robert Niehaus, Greenhill set up a SPAC in “hoping [...] to be a bridge to the public market in a recession. [...] My overall view of SPACs are they work best in a recession where you have companies that in and of themselves can’t go public or have a hard time going public and effectively the people behind the SPAC [...] allow companies to potentially access the public equity markets” (Robert Niehaus, personal communication, 14 September 2022). This was further demonstrated by the fact that Niehaus invested his own money in the SPAC, which demonstrates that, to attract investors, it is important to have “skin in the game.”

To sum up, the data illustrating the numbers and volume of IPOs and SPACs, respectively, indicate that a financial crisis affects the possibility of going public. Moreover, even a SPAC, wherein the capital was already raised, is no guarantee for that it will work. All interviewees clearly stated how difficult it was for them to close the deal during these difficult times. However, they also acknowledge that the SPAC was the only solution available for Iridium at the time, which lends further support to the theories that a SPAC is an effective instrument during troubled times.

10. Iridium’s solution: The SPAC

On September 22, 2008, Iridium’s board decided to merge with the GHL Acquisition Corporation, a SPAC (SEC, 2008a). In this section, the specifics of a SPAC, the history, the process, the potential returns from SPACs, and how the Iridium case can be applied to the theory underlying SPACs will be explained in depth. In the end, the recent SPAC wave of 2020 to 2021, and what was different when compared to previous SPAC waves, will be discussed briefly.

10.1. Definition of a SPAC and the difference between it and a reverse merger

The Securities and Exchange Commission (“SEC”) defines a SPAC, a “special purpose acquisition company,” as a blank check company that acquires or merges with a private (seldomly, public) company (*SEC.Gov | What You Need to Know About SPACs – Updated Investor Bulletin*, n.d.). A “blank check company” is defined by Rule 419 as a company that is in a development stage with no specific business plan except acquiring an unidentified company

(Sjostrom, 2007). This must occur within a limited time frame after the SPAC shell company has completed its own traditional IPO. If the acquisition does not happen within 24 months, the SPAC will be closed (it will “deSPAC”), and the money shell company’s assets will be distributed to its shareholders (*SEC.Gov | What You Need to Know About SPACs – Updated Investor Bulletin*, n.d.).

A SPAC falls within the SEC’s definition of a “penny stock” if the SPAC does not raise more than \$5 million in its issue (Rule 3a-51-1 of the SEC). Because of this rule, every modern SPAC since 2003 has been structured to fulfill this threshold and to avoid additional regulation by the SEC (Cumming, 2019).

A SPAC transaction is not necessarily a typical reverse merger transaction, as defined by Sjostrom (2007). With a reverse merger, a “shell promoter” works with a private company to locate a non-operating or shell public company with the result that the shell company then merges with the private company. A shell company can be, for example, a previous operating company that ended operations and sold its assets, or one that never intended to have any operations and was simply set up to create a public shell. Although a reverse merger can also happen in the case of a SPAC transaction, the difference is that the SPAC is taken public with the intention of acquiring an operating business, whereas a reverse merger can also be accomplished with the intention of the operating company alone. In addition, a SPAC does not necessarily use a reverse merger construction because this may change on a deal-by-deal basis (Sjostrom, 2007).

10.2. History of SPACs and their legal structure

Blank check companies are not a new idea, having first emerged during the South Sea Bubble of the 1720s as “blind pools.” They were later re-invented in the U.S. capital markets, during the 1920s, as “investment trusts,” but their use diminished with the financial crisis in the late 1920s. During the 1980s, the concepts of blind pools and investment trusts were reestablished as blank check companies, with penny stock promoters becoming the main sellers on “over the counter” (OTC) markets, which had few regulations and required disclosures. Thanks to the lack of regulatory oversight in this market, fraudulent behavior was prevalent. “Pump-and-dump” schemes, exercising the warrants after the announced acquisition of a target company with the expectation that the market would respond positively to the announcement, were common. After the stock price jump, the management team would sell its shares and claim the profits (Cumming, 2019). From 1980 to 1989, securities fraud claims had increased by more

than 260 percent. The SEC, in a hearing, described fraud in the penny stock market as “epidemic” (Riemer, 2007).

In response, the U.S. Congress passed the Penny Stock Reform Act in 1990, which mandated that the SEC introduce Rule 419-a and regulate the market. One key aspect of the rule was that a minimum of 90% blank check companies’ funds had to be invested in escrow accounts (which invested in U.S. Government treasury bonds) until the acquisition was consummated. Furthermore, the target company was required to maintain at least 80% of its net assets in escrow accounts, and trading of the escrow securities was prohibited. Lastly, the blank check companies had to prepare quarterly financial statements for their investors and the SEC (Berger et al., 2014), and investors were granted the right to a refund of their investment if they opposed the acquisition. The approval threshold required 80% of the shareholders to vote in favor of the deal (Riemer, 2007).

This act reduced the blank check market because it made the acquisition of a potential target cumbersome and complicated. However, this would change in 1993, when David Nussbaum, Chairman of GKN Securities, adapted the blank check company into a form exempt from Rule 419, creating the first SPAC, and launching the subsequent SPAC wave. He had the idea of raising more than five million dollars in assets, thus removing the SPAC from the definition of a penny stock and the attendant regulations. Furthermore, Nussbaum voluntarily adopted all of Rule 419’s restrictions in the contractual agreements to attract investors and pacify regulators (Riemer, 2007). In the late 1990s, this practice fell to the wayside because companies began to go public through the traditional IPO process, and the restrictions for that were relaxed at that time. Adding to this, the National Association of Securities Dealers withdrew the licenses of GKN Securities due to its market dominance. Cumming (2019), who distinguished different SPAC generations and waves regarding the regulatory framework and volume, describes this as the end of the first wave of SPACs.

The second SPAC wave began when Early Bird Capital underwrote the first modern SPAC in 2003 and adopted obligations similar to those Nussbaum had previously adopted (Cumming, 2019). SPACs grew tremendously until the onset of the financial crisis. In fact, by 2007, SPAC IPOs accounted for 25% of all U.S. IPOs. In contrast to other SPAC generations, the capital during the second generation stemmed mainly from hedge funds. One reason for this was hedge funds’ ability to use arbitrage and greenmailing strategies, which we will discuss later in the chapter. The global financial crisis ended the SPAC wave and allowed sponsors to address the problems that arose from the second-generation structure.

One reason for the failure of many SPACs was the 80% approval threshold, which gave significant power to the holders of the other 20%. This structure permitted hedge funds to use the 20% structure to block potential deals and bet on, or force, the sponsors to buy them out. A solution implemented during the third generation SPACs was to exchange tender offers for shareholder votes, which meant shareholders could return their shares to the SPAC—but they would not have any vote in the acquisition of a company. During this time, and until late 2016, exchange listing standards required a shareholder vote structure, meaning that a third generation SPAC with a tender could only be traded OTC, and therefore, had only a limited IPO share (Greenspan, 2021).

The fourth, and current, SPAC wave began when the SEC approved the NYSE's rule change allowing SPACs with tender offers to trade on the exchange. A brief outlook on the most recent SPAC wave will be offered later in this section.

10.3. SPAC process

A typical SPAC can be divided into three stages of its lifecycle:

- Establishment phase
- IPO event
- SPAC exit

Establishment phase: According to Lewellen (2009) and Cumming et al. (2019), a SPAC is formally established when underwriters, along with the management team, file Form S-1 with the SEC. This makes clear that a future IPO is planned, and the first investment of \$25,000 into a new public shell company has been made. In addition, a limited time frame for finding a proper acquisition target is triggered. The S-1 document also addresses other aspects of the SPAC, such as the underwriting agreement, management team, escrow accounts, etc. When this regulatory obstacle is met, the IPO for the shell company is prepared (Cumming, 2019; S. Lewellen, 2009).

IPO event: A SPAC normally conducts a unit IPO, in which each unit consists of a combination of warrants and stocks. In the case of a SPAC IPO, units sold “are typically priced at either six, eight, or ten dollars” (Riemer, 2007, p. 952), and consist of one or more shares of common stock and warrants which can be exercised at a set price (Riemer, 2007). Cumming et al. (2019) noticed that during the evolution of SPAC, the number of warrants used in the IPO fluctuated with market pressures. As mentioned above, because of the instrument's “penny stock” history, a SPAC will always price its securities above \$5 to avoid the SEC regulation.

After the IPO, the net proceeds deducted from administrative expenses are invested in an escrow account at an independent financial institution, which will, in turn, invest the funds in short-term, high-grade securities until the SPAC is either conducting its acquisition or is liquidated (Cumming, 2019; S. Lewellen, 2009).

SPAC exit: Generally, a SPAC's prospectus will contain a defined time horizon, within which it will need to acquire a target. In most cases, this is two years. However, the time frame may be extended if an acquisition is announced but will take more time to complete for regulatory reasons. Before a tender offer can be made, an acquisition has to be approved in a final shareholder meeting, which was difficult in earlier SPAC generations, because some shareholders may have had their own incentives, separate from those of the other shareholders. Today, with the tender offer requirement, shareholders are unable to prevent an acquisition and can only either except the merger or redeem their shares (Cumming, 2019).

It is important to keep this structure in mind for this paper's later analysis of different returns, which can vary considerably between a SPAC's IPO and post-merger performance, as well as for the different actors involved. In addition, the figure of a typical second-generation SPAC lifecycle, based on Lewellen (2009), is depicted in Appendix 1.

10.3.1. The actors in a SPAC and their incentives

In order to understand the return characteristics of a SPAC, the different actors in a SPAC and their incentives must be understood. In general, the three main actors in a SPAC IPO can be differentiated as follows:

1. The SPAC management team (or, the "sponsors")
2. The underwriters
3. The investors

In addition, the **target company** is a separate stakeholder with its own incentives.

The sponsors: The sponsors are responsible for setting up the shell company. Since a SPAC does not have any past performance, investors investigate and evaluate "the competence, reputation, and past performance of the management team" (Riemer, 2007, p. 958) in order to predict the potential return from their SPAC (Riemer, 2007). Therefore, many SPAC sponsors are well-known businesspeople with established track records, like Steve Wozniak or Roland Berger, but in the 2020 to 2021 SPAC wave, media celebrities participated, as well (Curry, n.d.). Typically, management invests an initial \$25,000 to set up the SPAC pre-IPO. The price ranges between \$0.017 and \$0.047 per share. At the IPO, management keeps 20%, the so-called "finder's fee" or "promote," and sells 80% of their shares (Cumming, 2019), since the sponsors

do not receive any salaried compensation or management fee (Riemer, 2007). Additionally, these sponsor shares have no access or right to the trust account, meaning that, in case a merger fails to occur, management will receive nothing (Gahng et al., 2021). This finder fee was one of the initial reasons for dilution of investors and is comparable to the carry structure in private equity funds (Cumming, 2019; Chatterjee et al., 2016). The finder fee also explains one of the main incentives of the sponsors—namely, to close the deal, sometimes at all costs, thus creating significant agency problems (Howe and O’Brien, 2012). Lakicevic and Vulcanovic (2013) have argued that any post-acquisition price higher than \$1 would make a management team favorable to the deal (Lakicevic and Vulcanovic, 2013; Cumming, 2019). To alleviate these types of investor concerns, since mid-2005, stakeholders have pressured management teams to increase their monetary commitment by purchasing warrants before the IPO (Cumming, 2019). Another important signal is whether management teams have been able to raise money for another SPAC (Lakicevic and Vulcanovic, 2013).

The underwriters: Underwriters play a crucial role in setting up SPACs. According to Heyman (2007), underwriters favor SPACs due to their higher interest in market volatility (see also reasoning above) (Heyman, 2007). Dimitrova (2017) points out that underwriters also profit from being SPAC advisors and receive an average underwriting fee of approximately 7% (Cumming, 2019). It should be noted, however, that in later SPAC generations, the underwriting fee was divided into immediate and deferred portions to better align the incentives of investors, managers, and underwriters. Cumming et al. (2014) observed that the composition of underwriters affects acquisition approval, meaning that leading and well-known investment banks have a higher likelihood of approval. Generally, SPAC underwriters’ incentives can be compared with the incentives of IPO underwriters.

The investors: It is crucial to differentiate between the investor bases of second-wave SPACs and present-day SPACs. In this analysis, the incentives of the main investor base at the time of the Iridium SPAC (e.g. the second-wave SPAC) will be investigated, whereas later in the section, the differences in the investor base between the SPAC waves will be explained. In addition, it is crucial to differentiate between the investors in the SPAC, and investors in the merged company. This analysis will shed light on pre-merger SPAC investors.

Investors in the second SPAC generation were mainly institutional (Cumming, 2019), and although they provided 97% of the cash in the shell company, they only held 78.2% of the shares, indicating significant dilution (Lakicevic and Vulcanovic, 2013). Underwriters and sponsors compensated for this dilution not only by setting up escrow accounts but also by issuing warrants, which investors could sell (Cumming, 2019). Hedge funds, especially, used

SPACs to implement their strategies, but not because they were interested in the underlying assets (Howe and O'Brien, 2012). Lewellen (2009) differentiates hedge fund investors into two broad categories: "enhanced cash" (EC) and "arbitrage" hedge funds. "Enhanced cash" hedge funds purchased a SPAC at a discount prior to announcement of the acquisition, voted against the acquisition, and redeemed its shares for the value in the trust, gaining a riskless profit. Arbitrage hedge funds, however, held, exercised, or shorted the units of a SPAC. Greenmailing was an additional strategy hedge funds used. Shareholders with substantial ownership (depending on the SPAC acquisition approval) could block an acquisition and force management to purchase their stakes at a premium (S. Lewellen, 2009). Lewellen (2009) points out that EC hedge funds accounted for a sizable portion of SPAC investors during the second wave, making successful acquisitions very difficult. Therefore, SPAC managers had to find other institutions that would purchase the shares from these IPO investors.

With the option of redemption, another investor base has become important over time. Merging SPACs have a minimum cash requirement that the shell company must deliver to the operating company. Due to the uncertainty of redemption, one current option for sponsors is to seek PIPE investments (Private Investment in Public Equity) as a means of infusing additional cash into the company and offsetting redemptions. PIPE investors are also important for influencing the investor base not to redeem. Due to their size and importance, they often receive large discounts on their acquired share price (on average 20%), which is one incentive for them to be invest in the first place (Gahng et al., 2021).

The target company: Similar to IPOs, SPAC targets are incentivized to raise additional equity capital and go public. By using a SPAC, a target can avoid the scrutiny and regulation of a traditional IPO. Furthermore, owners can cash out and diversify their portfolios, and private equity funds and VCs might use it as an option for exiting one of their portfolio companies. Lewellen (2009) and Dimitrova (2017) also point out that target companies can benefit from the expertise of the SPAC management team.

In sum, several steps must be taken to undertake an acquisition via SPAC within its time frame. As shown, incentives in second-generation SPACs were misaligned. The sponsors had to underwrite to receive their promotion, which had major consequences for the post-merger returns, and hedge funds were not really interested in the company, itself, but in the short-term returns they could gain. In combination with the market environment at that time, it was not an easy environment in which to close Iridium.

10.3.2. SPAC process of Iridium

As typical, Greenhill set up the SPAC, GH Acquisition Corp., by filing its S-1 on November 2, 2007 (SEC, 2008a). As Cumming (2019) and Lewellen (2009) have observed, Greenhill, as the sponsor, acquired the units for a very low price. On November 13, 2007, Greenhill bought all of the 11.5 million units, with each unit consisting of one common share and one warrant per share, for \$25,000 in cash, or about \$0.003 per unit.

The IPO was conducted on February 21, 2008. Forty million units were sold, garnering \$400 million in capital. As typical for a SPAC, the warrants were already in the money with an exercise price of \$7 per share. In order to avoid the penny stock rule, the units were sold for \$10 per unit, generating gross proceeds of \$400 million. In addition, the sponsors received 8 million warrants at \$1.00 per warrant with the same exercise price. Per SPAC standards, the \$400 million (consisting of \$375.6 million IPO proceeds net underwriters' discounts and commissions, \$16.4 million deferred underwriting commissions, and the \$8.0 million warrants proceeds) were placed in the escrow account, in this case, at Wachovia Securities LLC. Thus, GHQ SPAC displayed all the typical characteristics of a second-generation SPAC. On September 30, 2008, the balance in the trust account was approximately \$402.3 million (SEC, 2008d).

Following the SPAC process, GHQ then sought a suitable target and reviewed, according to SEC files, more than 190 opportunities and had in-depth discussions with three potential targets. These discussions ended due to a rapid downturn in market valuations in spring 2008 or misalignments in the price. This would change, however, on April 28, 2008, when GHQ was contacted by Michael J. Price, who was then senior managing partner of Evercore Partners and advisor to Iridium (SEC, 2008d).

As Matt Desch explained in the interview, he brought in Evercore (and his personal contact Michael Price) to evaluate options in raising equity. First, Matt Desch and his advisors tried to get private equity funding but were unsuccessful due to the long-time horizon and large CapEx necessary to fund the next satellites (Matt Desch, personal communication, 15 August 2022).

Thanks to his connections, Matt Desch was contacted by people in the industry, making him aware of the SPAC option, which was in a boom period during 2007. According to Desch, he “went to Evercore, and said, hey, these guys in SPACs are coming to talk to me, what do know about SPACs? And they said let us do some research” (Matt Desch, personal communication, 15 August 2022). This shows that, although the SPAC market was fairly “hot,” for many banks it was very new, and not everyone had the necessary expertise. Matt Desch

started by talking to between seven and ten SPACs, but he did not have the capacity to start discussions with all of them. Matt Desch stated it: “[...] I had gone to Michael and said I can’t keep talking to just every SPAC there is. You guys gotta do some analysis and figure out what are the best ones. [...] So, they made a list up about the 15 top ones and these would be the ones we really spend our time on and I would say the Greenhill one was” (Matt Desch, personal communication, 15 August 2022).

Both parties were favorable toward each other. Scott Bok and Robert Niehaus, in charge of the Greenhill SPAC and Greenhill PE, respectively, were very favorable toward Iridium, seeing it as a perfect growth opportunity, as opposed to the slow-growth manufacturing companies they had previously reviewed (Scott Bok, personal communication, 23 August 2022; Robert Niehaus, personal communication, 14 September 2022). Moreover, Matt Desch liked that Greenhill had previously made successful investments in telecom companies, such as Global Signal, building up expertise and interest in the industry. Further, Michael Price pointed out that one advantage over the private equity solution was that, in the future, Iridium would have access to growth capital and publicly traded currency, as well as greater liquidity going forward. As an additional consideration, in its latest rounds PE funding dialogues, Iridium had not been able to obtain commitments for the amounts of cash Greenhill could offer through its SPAC (SEC, 2009).

After one month of meetings, financial due diligence, and valuation, on May 29, 2008, Scott Bok gave an oral indication of his desire to acquire Iridium. The following months, until September 2008, were used to draft the final documents between Iridium, its main shareholders, and GHQ. On September 22, 2008, both parties executed the transaction agreement, and on the following day, the proposed acquisition was announced. In light of the difficult and deteriorating market conditions, the transaction agreement was negotiated and finalized on April 28, 2009. On September 23, 2009, so nearly one year later, but still within the two-year time horizon, the shareholder voting took place (SEC, 2009).

As mentioned above, during the second SPAC generation, shareholders had considerable power due to the shareholder vote, and this was true with the GHQ SPAC. Additionally, common hedge fund strategies to sweeten their returns by using, for example, a greenmailing strategy were discussed. Although during the interviews, neither Robert Niehaus nor Scott Bok indicated anything about shareholders opposing a deal, it can be deduced that they were concerned about this probability. Matt Desch supported this argument in the first interview as well, saying, “It’s torturous because the investors have a lot of control. You know they can vote no. You have to get more of them to vote yes. They really aren’t the kind of

people who are investing in satellite companies. They were investors in SPACs. [...] Scott Bok [...] went in and they cut some side deals to give up more of their warrants and to price some of these warrants that were given to us out of the market [...]“ (Matt Desch, personal communication, 15 August 2022). The SEC Definitive Proxy Statements shed some light on the mechanics. On June 2, 2009, GHQ entered into privately-negotiated agreements to repurchase stocks from a limited number of GHQ stockholders who have invested in “GHQ common stock based on investment strategies that we believe are focused on fixed income like returns rather [...] growth prospects of the company following completion [...] (SEC, 2009, p. 73). And further: “[...] it is important for the company to develop a stockholder base with a longer-term view, interested in and knowledgeable about the company’s underlying business [...] and believes that the combination of Forward Purchases and the Future Offering will permit GHQ to accelerate this transition. GHQ recently initiated discussions with a limited number of stockholders about their willingness to enter into Forward Purchases. [...] the purchase price [...] would be [...] equal to the amount the stockholder could receive by voting against the acquisition [...].”

In the face of these optional side deals, the sponsors worked to finalize the transaction. And a bit later, the warrants had to be restructured, as Matt Desch mentioned. On July 29, 2009, approximately 27 million warrants were restructured to reduce the potential dilution of stockholders. GHQ would repurchase approximately 12.4 million warrants for \$3 million in Cash and \$12.4 million worth of common GHQ stock. The other 14 million warrants had to be restructured, GHQ had to accept a higher strike price for the restructured warrants of \$18 (before \$7) in addition to a longer exercise period. Also, Scott Bok and Robert Niehaus personally restructured 400k warrants into the new format to show their commitment and demonstrate they had skin in the game, and potentially, to ensure shareholders would agree to the vote. The warrants of the other shareholders, like the Banc of America, remained at the \$7 exercise price (SEC, 2009). In the end, the shareholders agreed to the deal, and GHQ began trading as Iridium.

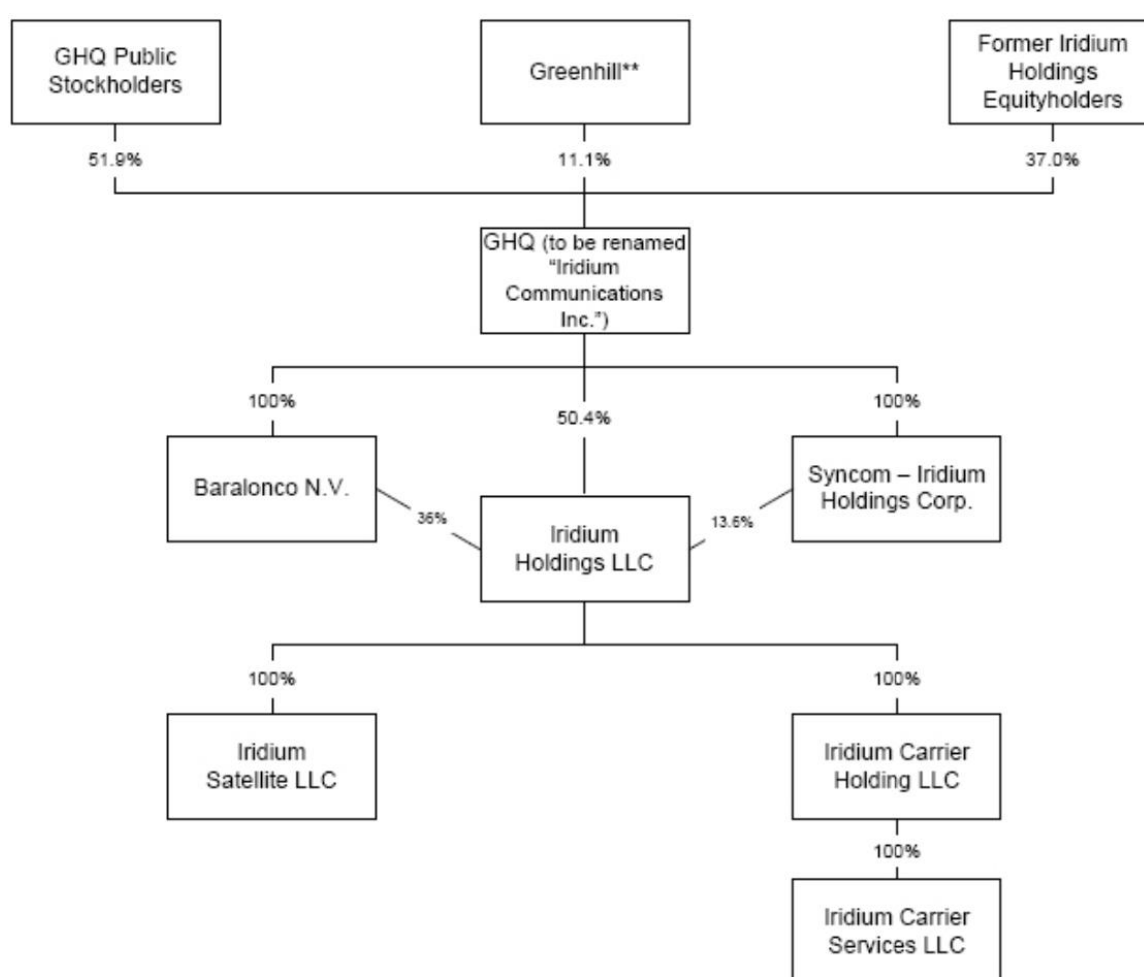
10.3.3. Deal structure

The structuring of the deal was complicated because many different parties had to agree: GHQ, the shareholders of GHQ, and the current shareholders of Iridium, especially Syncom and Baralonco. The following diagram of the Definitive Proxy Statement from 2009 (Figure 5) sheds light on the specific structural set-up (SEC, 2009). As Figure 5 illustrates, it was agreed that the stockholders of GHQ should own 60.6% of the newly formed company, and the old

shareholders held 37.0%. The final 2.4% was to be owned by Greenhill & Co. Europe Holdings Limited, as a result of a \$22.9 million convertible subordinate promissory note from Iridium Holdings (SEC, 2009).

After the successful merger, the former owner, Baralonco, would become the biggest shareholder, with 13.4% ownership, followed by Greenhill (including Greenhill Europe's ownership), with 11.1% ownership.

Figure 5: Post-Acquisition Organizational Structure



In summary, the Iridium SPAC fits the model of a second-generation SPAC at that time. The SPAC format had the normal characteristics of that SPAC generation. Further, it can be seen how the shareholders' power affected the deal structure. To prevent a negative shareholder vote, the sponsors around Scott Bok and Robert Niehaus had to undertake significant restructuring and giving up of their shares. The next sections will shed light on SPAC return characteristics, in theory, success factors in SPACs, a comparison between IPO and SPAC returns, and examine Iridium, and how its returns fared in comparison to other SPACs.

10.3.4. SPAC returns and characteristics

This section analyzes SPACs and their different return characteristics. For a good comparison, the returns at different stages of their lifecycle must be analyzed, like the initial IPO and the merger, but also for the different actors in the SPAC. Therefore, in the following sections, the return characteristics of the SPAC, the market pricing effect, the return over the lifetime of a SPAC, and the returns of the different actors will be analyzed.

10.3.4.1. The market pricing effect

Jenkinson and Sousa (2015) analyzed the return characteristics of every successful SPAC. This paper was selected because it examined SPACs of the second generation, that is SPACs established between August 2003 and June 2008. They analyzed the returns six months after the acquisition was made and came to the conclusion that, on average, SPACs demonstrated returns of -24%. The returns did not improve over time but become even worse, with a cumulative return of -55% after one year (Jenkinson and Sousa, 2015).

However, Jenkinson and Sousa (2015) also differentiated the SPAC sample into “good” and “bad” SPACs. A good SPAC means that investors ratified the transaction when the share price at the decision date was higher than the trust value per share, indicating that the market valued the deal as value-creating. They noticed that the share price immediately reacted on the announcement date and either went up or decreased, which strengthens their argument with respect to the immediate pricing effect of a SPAC. The results of their analysis demonstrated that the market immediately responded, and the average returns were significantly better for the good SPACs than the bad SPACs. On average, 26 weeks after the acquisition, the difference between good and bad SPACs was 32.8%. Good SPACs performed similarly to the market during the first six months, whereas the bad SPACs created losses (Jenkinson and Sousa, 2015). These results were further shown by Dimitrova (2017), who also found that SPAC sponsors are more willing to purchase shares in the open market for a bad deal, proving that SPAC sponsors are conscious about a potentially bad investment and buy out the holdings of likely no-voters. Gahng et al. (2021), in their study, support the argument that the market is a strong indicator of a “good” or “bad” SPAC, based on redemption ratios and the timing of the deal. They noted that high redemption ratios and late timing are associated with a lower SPAC and, hence, lower returns.

10.3.4.2. Returns of the SPAC over its lifecycle

Howe and O'Brien (2012) analyzed returns during the different stages of a SPAC. As with Jenkinson and Sousa, Howe and O'Brien analyzed the return characteristics during the second SPAC generation, which is why this paper was chosen. Howe and O'Brien (2012) observed that, between IPO and acquisition announcement, the median SPAC return was 3.5% and mean 5.5%, meaning that the stock price remained mainly unchanged. This makes sense as the SPAC is only a shell company and has no assets except for cash. Further, Howe and O'Brien analyzed a positive, but small, market reaction to the acquisition announcement (1.7% mean) and no real overpayment in the transaction. The minimum stock price reaction at the announcement date was only -6.8%, which Howe and O'Brien (2012) suggest is due to the governance structure restraining managers from value-destroying acquisitions. It could be argued that knowledge of the shareholder vote is one of the incentives to create a good deal for shareholders. Otherwise, the deal would fall through. This is also supported by Dimitrova (2017), who observed that, in the three-day window around the acquisition announcement, the abnormal returns were positive at 1.5%. Thus, SPAC managers make better acquisitions than public acquirers, which explains the short-term gains (Dimitrova, 2017). Tran (2010) further explains this phenomenon by indicating SPACs make more focused acquisitions, and the shareholder vote was a strong incentive to offer a good deal.

However, Howe and O'Brien also analyzed the long-term returns after the SPAC merger and supported Jenkinson and Sousa's assessment of long-term negative returns, but they also examined longer-time periods. According to Howe and O'Brien, over the three-year period, the return is even more negative with -54%, which could be interpreted as sponsors are good at identifying good acquisitions but not at managing those. The different success factors will be analyzed in detail later in the section.

Based on the evidence discussed above, it can be concluded that newly-merged SPAC companies performed, on average, poorly and were value-destroying in most cases. Even in the cases of good SPACs, they were value-destroying, although slightly less so than for bad SPACs. But this is also true for normal IPOs, whose performance will be later compared with SPAC returns. The question remains, why do SPACs exist if the return characteristics are poor? If this were true, then SPACs would not be possible in the market, because neither the sponsors nor the investors would be invested in the companies. Therefore, it is crucial to understand the returns for the different stakeholders in a SPAC.

10.3.4.3. Returns of the SPAC for the different actors

Gahng et al. (2021) analyzed the return prospects of the different actors in a SPAC. In their analysis, they identify the different key participants in a SPAC: two investor bases, share and warrant holders, in line with the different lifecycle stages of SPACs and sponsors. They document that sponsors and SPAC IPO investors have achieved attractive returns. On the other hand, public market shareholders in the post-SPAC merged company bear the aforementioned losses. It should be noted that Gahng et al. (2021) only took the newer generation of SPACs, from 2010 to 2020, into account. This period was chosen because the SPAC IPO investors had the option to sell their stocks in the market prior to consummating a merger. Additionally, the shareholder vote was not used in this form of SPAC. Further, it is the first paper that looked into the return characteristics of different investors (Gahng et al., 2021).

According to their study, **SPAC period investors** gained, on average, a yearly return of 23.9% during the SPAC period, mainly due to the provided upside potential of the warrant. After the merger, the deSPAC period, IPO investors, however, realized losses of -11.3% over one year, presenting a strong incentive for SPAC IPO investors to sell or redeem the stock and keep the warrant. The outstanding warrants are exactly one of the reasons why the return profile might be as weak as it is, because if the “company is successful, the outstanding warrants are a drag on the upside returns to shareholders” (Gahng et al., 2021). Interestingly, even if the SPAC is liquidated, because the cash is invested in escrow accounts, which generate interest, the sponsors still realize a positive return of approximately 2% after paying the underwriting fee. Of course, this return depends on the performance of the escrow account and, hence, prevailing interest rates. The underwriting fees are financed by the purchase warrants of the sponsors, where the proceeds are invested in the escrow account. Gahng et al. (2021) compares this downside protection as equivalent to a default-free Treasury bill with an option to convert into a common stock, the return profile of which is further improved by the warrants. By looking at the return on warrants in one-year buy-and-hold positions, they observed that the return on warrants is 72.2%, meaning that warrant return investors outperformed share investors (Gahng et al., 2021).

The aforementioned **PIPE investors** received, on average, a return of 9.3%, due to the large discounts they enjoy on their investments. Compared to public market investors, who saw a return of -19.8% over the same one-year period, this investment was very profitable. Gahng et al. (2021) also noticed in the structure of PIPE investments that the higher the PIPE investment, the larger the discount for the purchase price, resulting in a one-year return of up to 32.4% for high PIPE investments.

Sponsors' returns stem mostly from post-IPO shares and warrants after a successful merger. Although their warrants might have better conditions (for example, no upside cap), they often must forfeit shares and agree to lock-up periods to attract PIPE investors and maintain the old investor base to keep the deal from collapsing. Post-merger lock-up periods mean that sponsors cannot sell their shares during the SPAC period. They can only earn returns if the deal is successful. Sponsors have a return on average of 615% to 744% one year after the consummated merger. Even the median return, while lower, is still 81% (Gahng et al., 2021).

Due to these return characteristics, we understand now why SPACs have been favored, especially in recent years. These returns and incentives to sponsors to pursue any deal they can have sparked criticism in media and academic literature over the last years, indicating that severe agency problems exist (Dimitrova, 2017). However, it should be noted that not every SPAC necessarily turned out to be a negative investment. On the contrary, some general success factors for long-term better returns have been observed.

10.3.5. Success factors

The success factors for merger approval and long-term success can be differentiated into seven broader categories:

1. The sponsors' quality
2. The target company
3. The dilution
4. The SPAC board independence
5. The underwriters
6. The post-merger sponsor affiliation
7. The acquisition timing

The **sponsors' quality** is one of the most important success factors for a SPAC. A good sponsor should find suitable target companies and be able to acquire them at a significantly reduced price, as compared to other players on the market, like PE funds. This is indicated by Vulcanovic (2017), who points out that, if a SPAC pays a finder fee to another institution to locate an acquisition target, it has a negative effect on post-merger success. The SPAC management signals their inability to locate a target, which increases moral hazard, and, moreover, is using escrow funds to finance the finder fee (Vulanovic, 2017). Interestingly, Cumming et al. (2014) indicate that the experience of the management team and the board does not necessarily enhance the success of a SPAC, and younger teams have a higher deal approval

probability. They interpret this to mean that a younger team has a higher wealth incentive to ensure a successful merger (Cumming et al., 2014). Lakicevic et al. (2014), however, take a bit of a different stance and argue that the number of founders and their respective experience is, indeed, a positive success factor for merger outcome and that management reputation increases the probability of a SPAC business combination. Further, if SPAC founders had previous experience in conducting a SPAC merger, it could be a factor for a higher likelihood of a merger due to the specialized nature of this market (Lakicevic et al., 2014). Gahng et al. (2021) also show that SPAC sponsors with relevant industry experience, in addition to high-quality underwriters, outperform on a return level (Gahng et al., 2021).

The **target company** is also one of the major factors for long-term success. Gahng et al. (2021) find that a SPAC merger is more likely for unprofitable companies. This should be also put into context with the incentives of the sponsors, who might be willing to merge with a less desirable company only to get a bonus (Gahng et al., 2021). Jenkinson and Sousa (2015) also indicate that the extreme incentives of sponsors might lead to the acquisition of low-quality companies (Jenkinson and Sousa, 2015).

Dilution from warrants may have an impact on returns as well. Gahng et al. (2021) point out that more dilution has a negative return characteristic, which could indicate that issuance of more warrants could be a long-term hindrance to a successful merger (Gahng et al., 2021).

The **board independence** of a SPAC board might also have an influence on the performance. Howe and O'Brien (2012) in their study indicated that SPACs with low board independence have a slightly better return characteristic than boards with high independence. The long-term results are quite striking, in which SPACs with low board independence outperform SPACs with high-board independence by approximately 30% over the first six months after the acquisition (Howe and O'Brien, 2012).

The **underwriters** also have, according to Dimitrova (2017), significant influence on the return characteristics of a merged SPAC. She mentions that a deferred underwriting fee might be a reason for underwriters to get involved in their own private interests, which are not necessarily aligned with the interests of the SPAC shareholders, hence pushing for any potential deal. She observed 47.9 percentage points lower returns for SPACs with a deferred underwriting fee (Dimitrova, 2017). In addition, the size and type of underwriter influences the outcome of a SPAC. Vulcanovic (2017) observes that higher involvement and the size of the underwriters, meaning if the investment bank can commit more resources, positively impacts the success of a post-merger SPAC. Further, he points out that a high-quality underwriter, in the sense of a well-known investment bank, increases the survival likelihood (Vulanovic, 2017).

Another factor of long-term SPAC performance is the involvement of the **sponsor after the merger**. Dimitrova (2017) observes that high sponsor ownership of the company has a negative effect on long-term SPAC performance, whereas the board representation of the sponsor has a positive effect on the performance (such as being board chair). With these findings, Dimitrova underscores the importance of continuous sponsor involvement in their company, because sponsors could also offer value by monitoring the newly merged company (Dimitrova, 2017). Vulanovic (2017) lends further support to this idea by arguing that board quality is, indeed, important to post-merger success.

Many sources indicate that **deal timing** has a significant impact on returns and deal approval. Tran (2010) finds that SPAC mergers announced 15 months after their IPO, so quite late in their lifecycles, earned significantly lower returns. One explanation is that deal pressure is a major incentive to get a deal done, so that sponsors can earn their shares, even though it might not be a good deal. This is further shown in a lower shareholder approval of only 52%, compared with 72% for deals announced within the first 15 months. However, Tran also indicates that institutional monitoring mitigates some of these concerns and garners a better announcement return (Tran, 2010). Gahng et al. (2021) further support this notion that late timing of deals is both associated with lower SPAC and deSPAC returns (Gahng et al., 2021). However, Dimitrova (2017) came to a slightly different conclusion. She found the relationship between the time to find a potential target and SPAC performance was an inverted U-shape, meaning that a longer search time for a company might lead to higher returns in the end. This could be because the due diligence is more thorough, and the target company is a more suitable asset. On the other hand, Dimitrova also observes that acquisitions announced too early or too late are perceived as negative by the market, in line with the findings of Tran and Gahng et al (Dimitrova, 2017).

To put it briefly, various factors are responsible for the success of a SPAC both during and after merger. In the next section, the success factors and returns of Iridium will be analyzed and put into the context of the theory as outlined above.

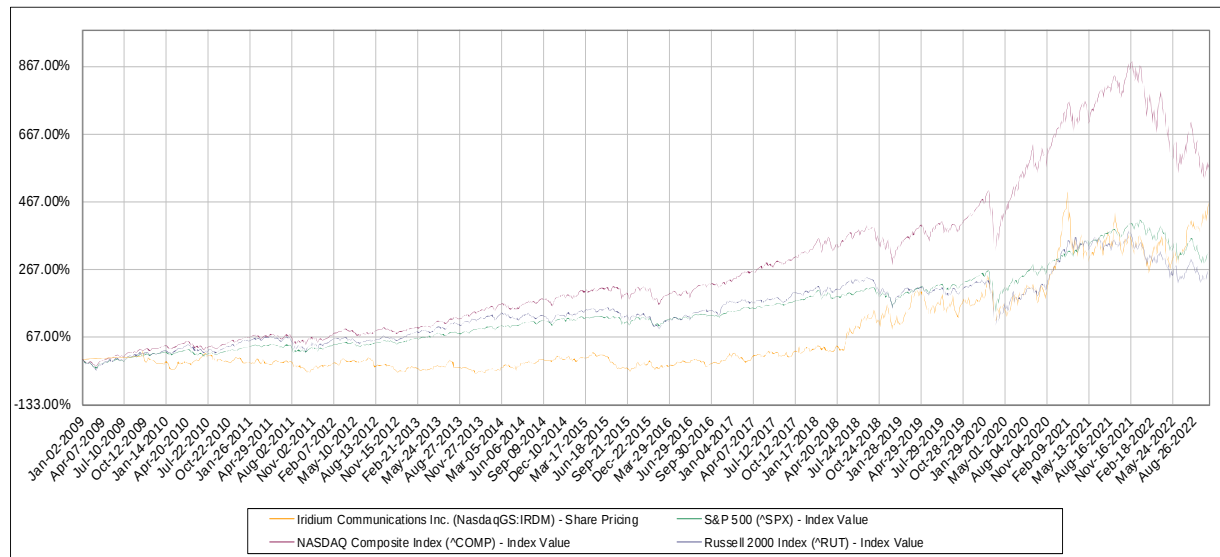
10.3.6. The long-term returns of Iridium in comparison

In this section, the specific returns Iridium achieved in the stock market will be discussed. According to the information provider SPAC Analytics (*SPAC Analytics - Home*, n.d.) Iridium is the best-performing SPAC, with a current share price of \$51.5 and a unit return of 855% (1st of November, 2022). Important to notice here is that SPAC Analytics refers to the unit returns, meaning the combined warrant and common stock. Unfortunately, further data comes with

significant costs, but looking only at this return, it can be concluded that Iridium, contrary to many other SPACs, is very well performing.

Iridium's stock performance will be compared in Figure 6 with benchmark indices like the Nasdaq Composite, Russel 2000 and S&P500, using Capital IQ to do so. (*Iridium Communications Inc. (NasdaqGS:IRDM) > Chart Builder, n.d.-a*)

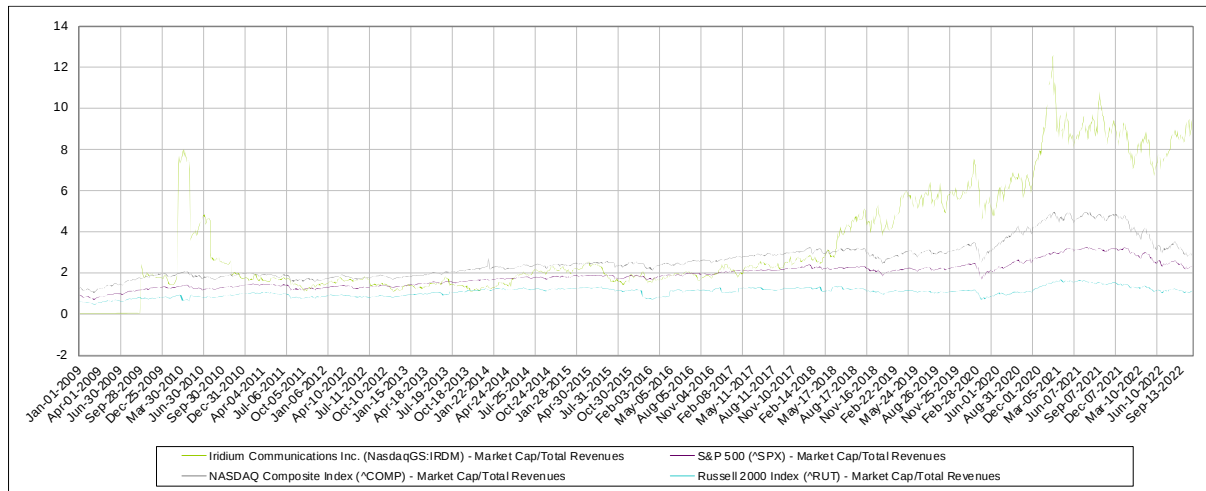
Figure 6: Indexed long-term Iridium returns relative to indices



As shown in Figure 6, Iridium's performance compares well to the general indices. For Figure 6, the beginning of January 2009, the year in which Iridium merged, was chosen as a start-date, and the figure analyzes how the company has performed over time until now (1st November 2022). Iridium achieved a share price return of 463.96%, which is above the S&P (313.83%) and Russel 2000 (266%), but below the Nasdaq (567.25%). Overall, it can be concluded that Iridium, contrary to what the theory of the overall returns outlined above suggests, was very successful. One reason may be that, in most papers, the researchers looked only into gains during the first three years, which are also not that positive for Iridium. This argument, and potential reasons for that will be analyzed later, but one important factor which played into this was the warrant structure of that time.

Further, the Market Cap/Total Revenues should be analyzed and compared to the composites. The reasoning behind this would be that a higher ratio would indicate a higher valuation of the company, hence a higher desirability. As outlined in Figure 7, it can be seen that Iridium has outperformed the indices, especially since 2018 (so, when IridiumNEXT was launching), and is today at a multiple of approximately 9.5x.

Figure 7: Market Cap / Total Revenues



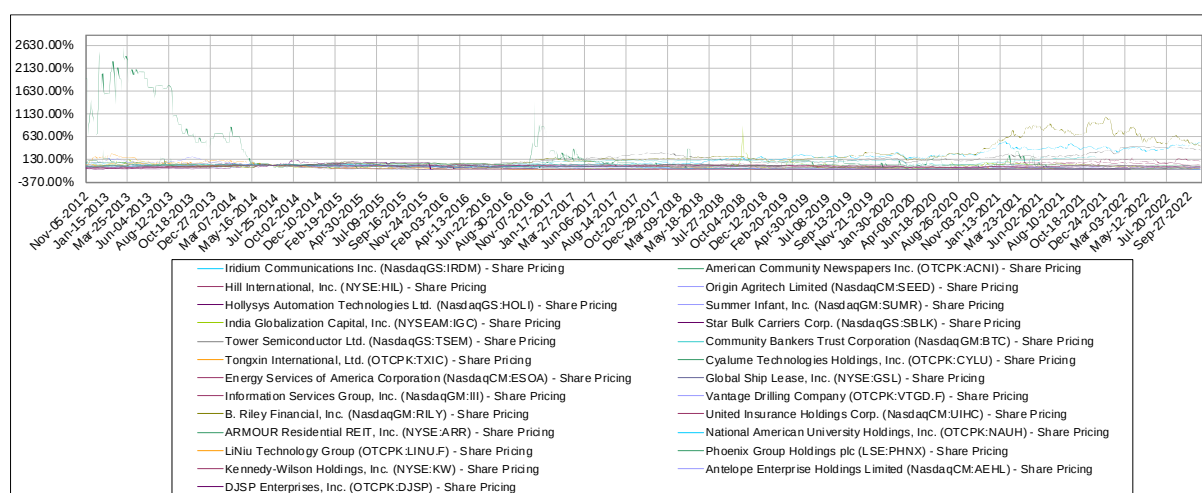
Further, Iridium's post-merger performance will be compared with other SPACs of that time. To do so, the comprehensive list of Dimitrova (2017, pp. 104-05), which also includes Iridium, will be used. The detailed analysis is provided in Appendix 5 and 6.

The goal was to examine the long-term performance and what happened with the companies after they went public from today's (November 2022) standpoint. In the appendices, a detailed overview of the companies at that time and what happened until now will be provided. For the performance analyses, only the currently existing original companies and recently acquired ones (within the last two years) will be included, because this will shed light on the long-term performance.

Of the 73 companies conducting a SPAC at that time, only 23 were still extant companies (31.5%), and three companies have acquired in the last 2 years, which we include, as well, in our performance analysis. Twenty-three companies were acquired over time, sometimes even multiple times, whereas approximately 11% of the companies went bankrupt. Interestingly, six, mostly-Chinese, companies were delisted by the SEC due to not fulfilling the regulatory standards.

To analyze the remaining original companies, CapitalIQ was used for the latest stock performance, which was done using a ten years' time horizon (see Figure 8). For the recently acquired companies the latest stock performance before they were acquired was selected.

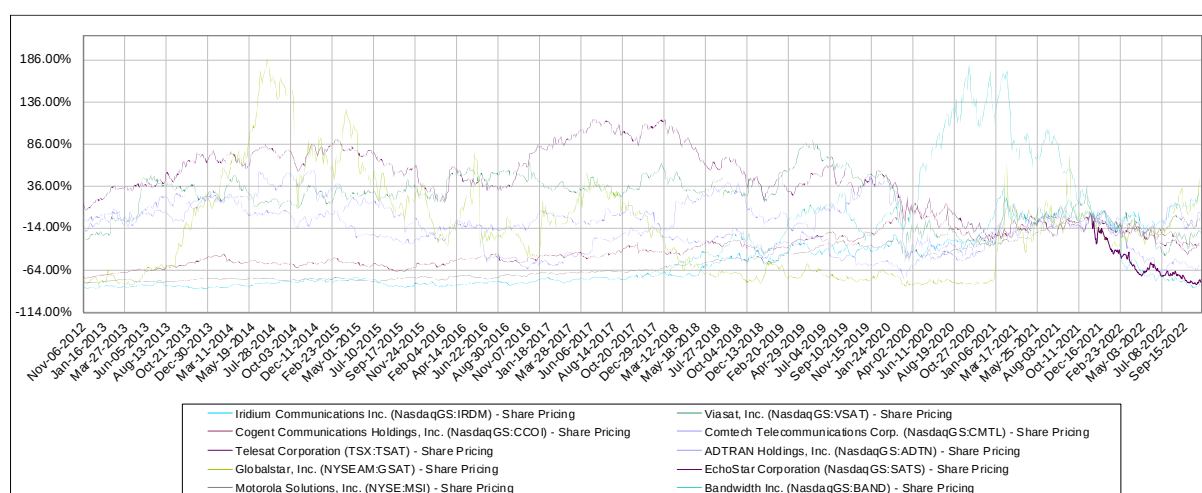
Figure 8: Indexed returns of still-existing second-generation SPACs



On average, these companies generated a shareholder return of 15.9%. The median return of -56.9%, however, shows that most of the companies were value destroying, and only a few really were successful, which would be in line with the theory of the overall negative returns of SPACs as outlined above. The data shows that, of the 25 companies in our sample, only 6 companies had positive returns (approximately 24%). Of these companies, Iridium was the best-performing stock to date, with a 519.98% return, showing that Iridium was maybe, indeed, an outlier as a well-performing SPAC company.

Finally, Iridium's return will be analyzed and compared with companies from the same industry to see how these companies fared. For this, comparable companies from CapitalIQ, which are companies focused on the Satellite industry, were used (*Iridium Communications Inc. (NasdaqGS:IRDM) Quick Comparable Analysis*, n.d.). Further, for the analysis in Figure 9 the CapitalIQ chart builder was used to create a comparison over the last ten years (*Iridium Communications Inc. (NasdaqGS:IRDM) > Chart Builder*, n.d.-b).

Figure 9: Indexed comparable company returns



The analysis of these companies, as outlined in Figure 9, shows that the average return was -24.7% and the median -26.3%, indicating that the success of Iridium cannot be solely based on the industry, itself. Iridium, in this analysis, was one of only two companies with a positive return of 29.6%, relative to the comparables.

To put it briefly, Iridium's long-term returns were compared to the indices, the SPACs of that time, and current comparable companies. It is clear that Iridium seems to be a special company, in a sense, because in comparison to its different peers, Iridium achieved high shareholder returns. In the next section, further light will be shed on the different success factors of Iridium, as compared with the theory of a successful SPAC company outlined in the section above.

10.3.7. Iridium's success factors

In order to analyze why Iridium was a successful SPAC-merger, it is necessary to examine the different success factors mentioned in the theoretical section above.

The sponsors' quality: As indicated by the theoretical discussion outlined earlier, the quality of the sponsor is an important factor for the long-term success of a company. Greenhill's investment bank and PE are, and have been, reputable in the telecommunications sector, indicating the high quality of the sponsor. For example, before the Iridium SPAC, Greenhill was an advisor for MCI Inc. on its sale to Verizon Communications in 2005, a very large deal of \$8.9 billion, showing that Greenhill was able to perform acquisitions of large target companies (*Recent Transactions | Greenhill & Co*, n.d.). Moreover, the people behind the sponsor were very knowledgeable of the sector. Scott Bok and Robert Niehaus had worked in investment banking since the 1980s in other large reputable institutions like Morgan Stanley (*Scott L. Bok | Greenhill & Co*, n.d.; *GCP Capital Partners – Team*, n.d.). Overall, it can be concluded that Greenhill fulfilled the success factor of being a reputable sponsor.

The target company: The quality of a company is especially important, indicated by the studies mentioned above observing that mostly unprofitable companies seek a SPAC merger to become public. For this part, the findings will be based particularly on IPO materials and the interviews.

Quality business: Iridium was only one of the two major players in the satellite communications sector but the sole firm with a genuinely global service, due to its 100% satellite coverage. In 2007, Iridium had already captured 23% of the mobile satellite services (MSS) market with a total market revenue of \$1.1 billion. In addition, Iridium had a strong presence in critical applications, like the aviation and maritime sectors and asset tracking.

Furthermore, Iridium had a large governmental contract in place since 2000 and served the Defense Department as a secured gateway for their communications. On top of this, in 2008, a new five-year contract was signed, securing a stable revenue source for the foreseeable future (SEC, 2008c).

Good valuation: At the acquisition date, Iridium was valued at an Enterprise Value multiple of 5.5x EBITDA to Iridium owners and at 7.5x EBITDA fully-distributed, post-combination valuation, including the warrants. However, the only other tradable comparable company, and biggest competitor, Inmarsat was valued at a 14.8x multiple, indicating that the stock was valued quite cheaply (SEC, 2008c).

During the conference call on September 23, 2008, in which Greenhill and Iridium discussed the transaction with investors, Matt Desch and Scott Bok also mentioned the valuation price (SEC, 2008d). One of the investors wanted to know why the company came at such a large discount compared to Inmarsat. Matt Desch responded that the looming financial crisis was one of the reasons for the large discount, but overall, he and the Iridium shareholders saw it as a starting price for the stock. In addition, Iridium shareholders wanted to remain a part of the newly forming company. Scott Bok said that “they [the shareholders] really wanted some capital and a public currency and a sponsorship and association” (SEC, 2008d), meaning that it was not necessarily meant as a cash-out business for the investors. Furthermore, they only had one financial comparable: Inmarsat.

Growing profitable business: Before the SPAC-merger, Iridium was a growing and profitable business. From 2002 until the SPAC-merger date in 2008, the subscriber base grew at a CAGR of 33%, from 59,000 to 305,000. The revenue and operational EBITDA were growing as well, with 31% and 87% CAGR, respectively over the same period (SEC, 2008c). Scott Bok described it in his presentation: “What we at GHL and Greenhill looked at was really just companies with this kind of growth trajectory, and you know sustained 30% plus percent growth on the top line and on the bottom line, over the last five years.” (SEC, 2008d) In addition, Iridium had also captured market share in a growing area. The MSS sector had grown from \$0.6 billion total revenues in 2001 to \$1.1 billion in 2007 and had growth projections of approximately 20% per year for the following years (SEC, 2008c).

Knowledgeable managers: Matt Desch had more than 28 years of experience in the telecom sector, but his team was also knowledgeable, having worked in the sector for approximately 20 years at different companies (SEC, 2008c). So, the team leading Iridium knew what they wanted to achieve and how to achieve it.

Hosted payloads: One Iridium innovation and important future revenue stream has been hosted payloads, meaning that secondary customers would rent space on the satellites and Iridium would use the communication networks to transport data for the needs of the companies. This was an idea Iridium wanted to achieve with the new IridiumNEXT system. Matt Desch stated in our interview, “The other part of the vision was hosted payload. We believe that we had some extra space on our satellite. We would use it probably for the U.S. government but maybe also another government. [...] The concept of a hosted payload was still pretty new. In fact, we were even kind of generating a whole industry momentum around hosted payloads. Don’t build your own network, use somebody else’s, and piggyback on them.” (Matt Desch, personal communication, 15 August 2022)

Overall, it can be determined that Iridium was not a typical example of a SPAC company of that time. It was a growing and solid business with several years of operations already under its belt.

The dilution: Dilution from warrants might have had an impact on the returns as well, as stated in the section above. Matt Desch agreed to this sentiment, because the stock price never came in the money, due to the warrant overhang and dilution it would create. “Investors can see that there’s dilution coming, so why would they let this stock trade above that value for the dilution to be there? So it also is like a cap on the equity value of the company” (Matt Desch, personal communication, 23 September 2022). Matt Desch was not really happy about the warrant structure and how it affected the share price for the first years, but as Iridium became more profitable, they took care of the warrants. “We created deals for them to buy them out or to retire them in some ways at some value. [...] We gave them a good deal for the value so that we could clean up our [...] capital structure. [...] I was happy to get them retired and even if there was a little bit of dilution [...] could be viewed as slightly short-term bad deal. I knew the long-term deal was worth it.” (Matt Desch, personal communication, 23 September 2022) As hinted in the return comparisons, the warrants had a significant impact on the share returns during the first years, as could be seen in the graphic. It should be noted, however, that another reason for weaker share returns in the first years, until 2017, was insecurity about the next satellite system, and whether the company would be able to launch it. When it became clear that it would be successful, however, the share price picked up accordingly. (*SPAC Investors Can Learn from Iridium’s 30-Year Overnight Success*, n.d.)

The SPAC board independence: This is a bit difficult to assess because Matt Desch was not happy with the board structure, to begin with. As he stated in the first interview, “Most people want to go private so they can get away from a board. I wanted to go public so I could

flush the board I had and get a new one of professional people.” (Matt Desch, personal communication, 15 August 2022) So, in the Iridium case, the SPAC was also used to change the board structure, which blocked each other in the beginning. The board would consist, after the IPO, of the 5 current Iridium outside directors and the CEO, in addition to two Greenhill, and two independent GHQ-nominated directors. The Greenhill representative would then serve as board chair.

The underwriters: Iridium also used deferred underwriting fees. At the time of the SPAC IPO, Bank of America agreed that approximately 70% of the underwriting discounts “will not be payable unless and until the Company completes a Business Combination and have waived Combination.” (SEC, n.d.-c, p. 323) According to the section 10.3.5., a deferred underwriting fee could lead to agency problems and lower returns, due to the underwriter pursuing its own interests. In this case also, underwriting fees were deferred, but we cannot confirm this point as valid for the Iridium case (depending on the time frame). In the long run, Iridium has been a very successful business.

The post-merger sponsor affiliation—Robert Niehaus and Global Signal experience: Long-term post-merger sponsor affiliation can be confirmed, since Robert Niehaus, the current chairman of Iridium, was also a sponsor. Robert Niehaus already had previous successful experience in the telecommunication sector due to Greenhill’s investment in Global Signal. Greenhill’s fund earned a money multiple of 8x on that investment, and Robert Niehaus was vice chairman of Global Signal, indicating that successful sponsor affiliation, in the long run, might be one of the success factors for Iridium (SEC, 2008d). Robert Niehaus also helped Matt Desch with improving his management team. Robert Niehaus said in the interview, “You really have to like the management, and the management was pretty uneven. Matt was good and had the potential to be really exceptional, and he totally fulfilled that. But his overall team, the finance person was weak. He had a very political general counsel. We had him removed the next year or two because he was trying to insert himself into this [...]. We look at lots of things, but each year he would upgrade the weakest person on his team. And so that eight years later, there was not one executive still at Iridium who had been one of Matt’s original direct reports. Matt has really done a good job of building a really first-class management team where we’re now.” (Robert Niehaus, personal communication, 14 September 2022) This shows that Robert Niehaus actively helped Iridium with his experience and can be confirmed as a major factor in the long-term success of Iridium.

The acquisition timing: As mentioned in the theory of the acquisition timing, a transaction too early or too late might appear to be rushed, thus leading to lower returns, since

the company may be perceived as lower quality. The SPAC IPO occurred in February 2008, and the announcement was made in September 2008, approximately 7 months later, which would be not considered too late or too early under the analysis of Dimitrova (2017).

In summary, many success factors can be applied to the Iridium case, but the quality and long-term commitment of the sponsors, as well as the high quality of the target company, stand out. In the following section, a brief outlook on the differences between SPAC and IPO returns will be presented.

10.4. Comparison of IPO and SPAC returns

As a theoretical counterfactual, if Iridium had been able to undergo a traditional IPO, in this section, the goal is to briefly compare IPO and SPAC returns. Although the characteristics of the companies choosing one of the options may differ significantly (Sjostrom, 2007), many companies will have to decide between one of these two options when going public. Therefore, it could be interesting to discuss the return characteristics between both options.

Dimitrova (2017) compared the SPAC returns of her study with the IPO returns of companies in that same year. According to her study, SPACs perform, on average, worse than IPOs. “Four years after the SPAC IPO, they have an average buy-and-hold return of -51.9% compared with 8.5% of other newly public firms” (Dimitrova, 2017, p. 109). In addition, she analyzed the operating performance and valuation of SPACs after acquisition and observed that SPACs have significantly-lower post-acquisition performance than peers in the same industry or newly-public companies, indicating that SPACs have not only poor stock price performance, but also operating performance compared to IPO companies (Dimitrova, 2017). This would support having a high-quality firm as a target company as a success factor.

This is bolstered by Kolb and Tykvová (2016), who also compared returns, along with other factors, between SPACs and IPOs. They found that, although IPO returns underperform the market, SPAC firms tend to do even worse over a 24-month period, while the performance gap between both types widened over time (J. Kolb and Tykvová, 2016). Sjostrom (2007) attributes the reason for this to the quality of companies considering of going public in a SPAC or reverse merger. He argues that only low-quality companies undertake this kind of merger, because more attractive options, like an IPO, are only available to higher-quality companies (Sjostrom, 2007). However, Bai et al. (2021), analyzed the newer form of SPACs and came to the conclusion that newer SPAC firms are more volatile and less profitable than traditional IPO companies but also exhibit significantly higher growth rates, especially on the operational side,

in areas such as revenues. This would indicate that the type of companies seeking a SPAC has changed over time. Hence, a future comparison of IPOs and SPACs might be interesting as well (Bai et al., 2021).

10.5. Conclusion: Was a SPAC a good option for Iridium?

Finally, using the points above, it should be determined whether the SPAC route was, in hindsight, a good option for Iridium. Dilution, lower average returns than an IPO, and shareholder vote could have been reasons not to go public via SPAC. On the other hand, Matt Desch made it absolutely clear, that Iridium didn't have many other options for going public. The IPO window was limited due to the financial crisis, and cash and liquidity were needed by the former shareholders, as well, to finance IridiumNEXT. As Matt Desch stated, "It was a challenging way to go public and stay pump. [...] If I could have done a traditional IPO and through all that process, I probably would have. [...] I mean, I would have gotten \$400m a more normal way, but that wasn't available to us then and probably wouldn't have been for a couple years and we didn't have a couple years to wait. [...] We had to move forward, because NEXT needed to be starting to be built. If it wasn't then we might have a gap in [satellite] coverage." (Matt Desch, personal communication, 15 August 2022)

In the end, Iridium was very successful, able to outperform many peer companies, having increased from approximately \$530 million initial enterprise value to nearly \$5 billion market value today. This was, of course, driven by very successful operational figures over the last few years. Whilst Iridium had revenues of \$321 million in 2008, it increased them to \$614.5 million in 2021. Also, the EBITDA and EBITDA margins increased significantly, from \$75 million in 2008 to \$378 million in 2021, with profitability increasing from 23% to 61.5%, in the same period (*Iridium Satellite Communications - Annual Reports*, 2021).

Thus, it appears in the end that the form of going public was not the main driver of success, but rather, the ability to be successful in the operational business and being able to deploy the new satellite generation were the critical factors.

Matt Desch also made it clear that he was not a fan of SPACs, because he had the wrong shareholders for a long period. Shareholders from the SPAC structure, who were not long-term holders of Iridium, had to be transitioned to longer-term holders. In addition, looking back, Matt Desch was also not very positive about the warrant overhang. In the end, however, all these concerns were eventually resolved.

10.6. Comparison with SPACs today

Lastly, a brief outlook at SPACs of the fourth generation, and especially a look at the SPAC boom of the 2020s, is of interest.

From 2020 until 2021, the SPAC market boomed, especially in the United States. SPAC IPOs accounted for more than 50% of total IPOs, raising more cash in 2020 than over the entire decade before, combined. In this new generation of SPAC, companies chose to go public via SPAC instead of an IPO due to SPAC proponents claiming that it is a cheaper way to go public. It can even be said that the hype around SPAC became a bubble, which can be seen in the share prices of SPAC shell companies rising above its initial value of \$10. This SPAC subsequently boom deflated in the second half of 2021 (Klausner and Ohlrogge, 2020).

Why did it happen? There are many explanations for why the SPAC market exploded in 2020. Part of it can be explained by the difficulties of start-ups going public in the years before. High-profile IPOs of companies like Lyft, Uber, and Slack did not trade well, not to mention the debacle of the planned WeWork IPO. This led companies to pause their initial IPO plans. Furthermore, the biggest investor in these high-profile companies, Softbank, decreased its investment activity after the failed IPOs, leading to less liquidity in the private venture market. These factors played into the search for alternative investment vehicles. The demand for these companies was reciprocated by retail investors seeking out volatile stocks, like Tesla and Virgin Galactic, one of the high-profile SPACs in 2019. This was further fueled by the new “Robinhood traders,” who actively wanted to buy speculative companies (Erickson et al., 2021). This short history also explains two of the major differences, when compared to previous SPAC generations: the shareholder structure and the SPAC target companies.

Change in shareholder structure: In contrast to previous SPAC generations, a shareholder vote was not necessary, and the tradability was much easier: reasons for many smaller retail investors seeking these hyped-up assets. According to a recent study by Klausner and Ohlrogge (2020), the costs of a SPAC are still high and dilutive, but are not borne by the initial SPAC investors, who sold their shares early on to the new group of shareholders, by mostly retail investors, who did not redeem their shares. In contrast to previous SPAC generations, in this new form of SPAC, the initial IPO shareholders redeemed their shares before the merger. This group of investors, mostly hedge funds, have become known as the “SPAC Mafia,” who have no interest in remaining invested through the merger. The median redemption rate for this cohort was 73%, but ¼ of SPACs even saw redemptions or selling over

95%, which is a major difference as compared with the Iridium SPAC generation (Klausner and Ohlrogge, 2020).

Change in companies: The type of companies seeking out a SPAC has also changed. As mentioned above, SPAC target companies of previous generations had overall a “less-quality” stigma, since high-quality companies had the more attractive option to go public via IPO. This however changed now. SPAC firms in the newer generation are younger, more start-up like. Even major venture capital figures like Chamath Palihapitiya have sponsored SPACs for many young companies (Erickson et al., 2021). In addition, they have less cash and less profitability than a traditional IPO company and, therefore, are riskier. In contrast to IPO companies, however, these SPAC target firms have higher revenue growth rates, consistent with the notion that these companies are more speculative nature with high growth opportunities (Bai et al., 2021). Justin Cadman stated in the interview, that many SPAC companies were however overvalued, and “had no business being public at any price, and some of them are high quality companies,” (Justin Cadman, personal communication, 8 September 2022) which demonstrates that, due to the SPAC boom and incentive structure, fewer quality companies went public. Going back to the theory of hot and cold IPO waves, a line can be seen that during a hot (SPAC) IPO wave, fewer quality companies seek to go public.

This bubble deflated in late 2021, going through a boom-and-bust cycle between 2020 and 2021. This cycle, mainly fueled by retail investors, was often also compared with the dot com bubble of the 2000s, since most investors were inexperienced and had a preference for “cool” companies, bidding up valuations hard to justify. By the end of June 2022, 706 SPACs were seeking out a merger partner, which has to have happened within 12 months, otherwise they must liquidate. It remains unclear if this will happen, but in hindsight, with the rise in interest rates and general difficulty in the current market environment, only time will tell (Gahng et al., 2021).

“Many of the companies that were intending to merge with SPACs and many that did merge with SPACs was not as robust as it probably could have been and definitely should have been. And there were some companies that were borderline fraudulent” (Justin Cadman on the SPAC boom of 2020-2021) (Justin Cadman, personal communication, 8 September 2022).

10.7. Conclusion: The Iridium Space SPAC as a role model for “Space SPACs”

With this section, the method of the SPAC was analyzed and explained using the specific example of Iridium. Iridium is a special case, because it fulfills many of the success criteria of a successful SPAC, which can be seen in the strong performance of the stock and its returns.

In addition, a brief look into the most recent SPAC boom was presented and the specifics of this particular occasion were explained.

As a final remark, it should be highlighted that during the most recent SPAC wave of 2020 to 2021, other space companies became public. After Virgin Galactic went public in 2019 via SPAC, a hype about other space companies (approximately \$20 billion in value) going public was created, with the hope of finding the next SpaceX, although many companies still did not have their final product on the market. Therefore, many of these companies were not able to fulfill these hopes and were not able to achieve their revenue goals, which did not necessarily deflect the optimism of investors and SPAC sponsors (at least until 2022), as indicated by the set-up of a SPAC only for space companies, “Space Acquisition Corp 1.” (*How the rocket business launched a wave of blank check acquisitions*, 2021).

During this wave of “Space SPACs,” Iridium became an example of a successful SPAC in this particular industry, although the differences are remarkable. As Scott Bok mentioned in an interview with Yahoo Finance, “Iridium had real cash flow, it had real revenue, it was an operating business. Where it was somewhat like the more speculative ones today was that it did have a huge need for capital and some degree of technological risk to put a new fleet of satellites in the sky.” (*SPAC Investors Can Learn from Iridium’s 30-Year Overnight Success*, n.d.) Herein lies the main differences between these two generations of SPAC companies: Whilst Iridium had existing revenues, the new space companies and their high valuations relied heavily on future revenue. Matt Desch also was more critical of the new space companies, as he said that the risk Iridium faced was negligible in comparison to the risk faced by the new space companies. It remains unclear if other space companies can copy the success of Iridium. In general, however, it can be noted that space companies may take longer to achieve success. It took the market some time to reflect Iridium’s value, especially because it was so dependent on the completion of the final satellites, but when it became clear that it would be successful, the market reflected the new value. Or as Matt Desch put it, “We’re a 30-year overnight success story”. (*SPAC Investors Can Learn from Iridium’s 30-Year Overnight Success*, n.d.)

11. Valuation

On the topic of valuing Iridium for the SPAC, Desch said the following: “I remember lots of debates about what the valuation really was. And... [it] wasn't really critical in the big scheme of things. It was more about, OK, we're getting this amount of cash in and it's going to go to these different people. This is what investors get. This is what these [people] get. This is what's left on the balance sheet. In the end with the valuation was, what the valuation was. [...] I knew

it was more about expanding the value of the company over time” (Matt Desch, personal communication, 23 September 2022). The essential question becomes: Are SPAC investors willing to approve the exchange of their \$10 per share investment for shares in a firm? The best way to answer this question is through the use of the usual tools. If investors refrained from using the usual tools, they were, nevertheless, implicitly making the assumptions and calculations. Justin Cadman said, “I’m sure we would have looked at your usual suspects of publicly traded comparables...some M&A trading precedents... [and a] discounted cash flow types of analysis. But, unfortunately, I don’t remember the details at this point” (Justin Cadman, personal communication, 8 September 2022). Hence, valuations using multiples and discounted cash flow analyses were developed and will be detailed in the following sections. Regarding Cadman’s second point, on the time that has passed since the SPAC, none of the other interviewees recalled the details either. Thus, available documentation was used for the purposes of valuation. When there was a need for additional data, various assumptions were made. The most important assumptions will be clearly stated.

11.1. Transaction and trading multiple valuation

The Iridium proxy statement filed with the SEC outlines the independent valuation performed by Duff & Phelps. The valuation included five publicly traded firms (Globalstar, Inmarsat, Orbcomm, Eutelsat Communications, and SES) and nine selected precedent transactions (Appendix 2). Ultimately, Duff & Phelps arrived at a range of 7.0x to 9.0x LTM operational EBITDA, which was multiplied by Iridium’s LTM operational EBITDA of \$90.4 million to arrive at Iridium’s implied enterprise values of between \$630 million to \$810 million. (*SCHEDULE 14A INFORMATION, SEC*, 2009). Another valuation available in the documentation, mentioned earlier in section 10.3.7, valued Iridium at an enterprise value of 5.5x first-half 2008 annualized EBITDA to Iridium owners and at 7.5x first-half 2008 annualized fully distributed post-combination valuation, including warrants. This valuation was backed out from what this paper calls the Market Cap method, outlined below in section 11.3. In the same presentation, Inmarsat, trading at 14.8x first-half 2008 annualized, was used as the only comparable and an argument for Iridium’s attractive valuation (*Iridium Communications Inc. Acquisition Statement SC TO-C*, 2008).

11.2. Discounted Cash Flow

The following sub-sections will outline three discounted cash flow (DCF) valuations. Section 11.2.1 presents the DCF found in the Iridium prospectus, which was performed by Duff &

Phelps. Given that Duff & Phelps discounted the cash flows by a weighted average cost of capital (WACC), Section 11.2.2 outlines a valuation in line with Duff & Phelps' main assumptions, including the discount rate. As a third valuation, an adjusted present value DCF is presented in 11.2.3. As a preview, the publicly available information was quite limited, and therefore, comparison proved challenging.

11.2.1. Documented DCF

Duff & Phelps' discounted cash flow analysis (Documented DCF) implied Iridium's enterprise value as between \$460 million and \$1,300 million. The valuation utilized Iridium's own 2008 and 2009 estimated financials to forecast cash flows for the period 2008 through 2025. The growth rates and margins reflected in Iridium's 2009 estimates were applied from 2010 through 2025. The 2009 estimates could not be found in the publicly available documentation.

According to the documentation, an initial case and a downside case, which reduced revenue growth by 20%, were prepared. At the end of the forecast period, the terminal value was calculated using the perpetuity formula. Duff & Phelps used a perpetual growth rate of 2% and three WACCs, 13.0%, 14.0%, and 15.0%. The WACC calculation was not explained in the available public documentation. It was not clear from the available documentation whether or not the equity value was calculated on a fully diluted basis. A matrix of the valuation results is found in Appendix 2 (*SCHEDULE 14A INFORMATION, SEC*, 2009).

11.2.2. Replicated DCF

A three-statement financial model (Replicated DCF) was built in an attempt to roughly replicate the results presented by Duff & Phelps mentioned in the previous section. The complete model is available as a side-by-side and key outputs are included in Appendix 3.

An important distinction between the Replicated DCF and the Documented DCF is the forecast period. Because the estimated 2008 and 2009 financials used by Duff & Phelps were unavailable, the Replicated DCF presents financial forecasts for the period 2010 to 2025. The reasoning for changing the forecast period is the following. Given that the aim was to forecast the financial statements based on historical trends and the publicly available documentation was incomplete for the purposes of forecasting, a variety of different sources were used to compile complete historical financial data. Nevertheless, the data was still incomplete, and the financial data in the official 2009 annual report was ultimately utilized to complete the financial data (*Iridium Satellite Communications - Annual Reports*, 2009). As Iridium began trading in late September 2009, while the assumption is large, the effect is relatively minimal considering

the fact that a three-month period in a fifteen-year forecast isn't significant. However, the issue of using ex-post financial data remains. This paper presents the view that the alternative, assumptions that would have completed the financial data set, would have been significantly worse.

The 2007 and 2008 financials were found on CapitalIQ and the Iridium Annual report of 2009. Because the 2007 and 2008 financial figures were presented pre-SPAC IPO and the 2009 financials were presented, after fair value adjustments, post-SPAC IPO, an additional 2008 balance sheet was constructed adjusted for the transaction effects. The proforma fair value adjustments to the balance sheet were found in the 2009 financial report (*Iridium Satellite Communications* - Annual Reports, 2009).

Income Statement Assumptions: The main income statement assumptions are related to revenue growth and margins. Revenue growth during the forecast period was assumed to be 15% due to Duff & Phelps statement that they used management budgets. The growth and margins were extrapolated from an investor presentation (SEC, 2008c), but given that the budgets themselves were unavailable, there is some uncertainty about whether these figures accurately reflect what Duff & Phelps used. Regarding margins, the historical cost of goods sold (COGS) figures were taken as a percentage of revenue and calculated as 41% in 2009. Due to the scalability of the business, COGS as a percentage of revenue was decreased by 1% annually over the forecast period. Operating expenses, also calculated as a percentage of historical revenue, as an average of 2007 – 2009 were 26% of revenue. For the same reasoning as COGS, this percentage was also decreased by 1% annually during the forecast period. Depreciation and amortization (D&A) and interest expense were calculated separately in the investment and debt modules, which will be explained in the investment module and debt module section. Extraordinary income and minority interests, although present in the historical financials, were assumed to be zero during the forecast period. The 2009 corporate tax rate of 35% was utilized, and the assumption was made that all taxes were paid in cash.

Balance Sheet Assumptions: Using the balance sheets from 2007 through 2009 and a 2008 transaction-adjusted balance sheet, days sales outstanding (DSO), days inventory outstanding (DIO), and days payable outstanding (DPO) were calculated using opening balances. The 2009 values for DSO, DIO, and DPO of 46.8, 67.2, and 20.6 were used, respectively, to forecast net working capital. Other Assets, Other Liabilities, Financial Assets, and Accrued Expenses were calculated as a percent of revenue. The average of 2007 through 2009 average, 7%, 12%, 2%, and 12%, respectively, were utilized for forecasting purposes.

Investment Module: In this module, Net PP&E, IridiumNEXT, and Intangible Assets were projected. IridiumNEXT was modeled separately to highlight the effects of the new constellation of satellites. The average net PP&E change between 2007 and 2008 was \$3.13 million, which was utilized to forecast the change in net PP&E during the forecast period. The fair value adjustment was taken into consideration and utilized as the starting PP&E value of \$401.7 million. Based on the timing of the replacement of the original generation of satellites, a thirty-year useful life was assumed. IridiumNEXT was assumed to cost \$2.7 billion. The associated CapEx was assumed to grow linearly between the beginning of the forecast and the expected launch date of 2019. The same useful life was assumed for IridiumNext. Intangible Assets were assumed to grow at 5% annually and amortization was assumed to be over 30 years.

Debt Module: The debt module included three different items. The aim was to forecast a target capital structure, given that a WACC was utilized by Duff & Phelps. Because Duff & Phelps did not reveal the target capital structure, leverage of 10% of assets was assumed. Given that the nature of the business was risky, a very conservative leverage ratio was chosen. The financing for IridiumNEXT was included in two additional tranches. Tranche one had an interest rate of 4.96% and a quantum of \$1.537 billion. Tranche two had an interest rate of 2.41% and a quantum of \$0.263 billion (SEC, 2010). While the data source is ex-post, it was assumed that management would have had relatively certain expectations for the financing terms. The press release stated that “The repayment period of seven years begins following substantial completion of the IridiumNEXT launch program, which is expected to occur in 2017” (SEC, 2010). Given that the repayment period was outside of the forecast period, this source of debt financing was modelled separately and not included in Iridium’s target capital structure.

Perpetual growth rate and WACC: The model assumes the perpetual growth rate and the WACC range used by Duff & Phelps (*SCHEDULE 14A INFORMATION*, SEC, 2009). Using the fully diluted number of shares, 87.8 million, share prices of \$12.0, \$15.7 and \$20.5 were calculated. Given that the model assumes a perpetuity, it is logical to assume at some point the warrants will be exercised. The enterprise value range of \$1,014.2 million to \$1,760.5 million.

11.2.3. Adjusted Present Value

Due to the change in debt payments, this paper presents the view that the target capital structure would not be constant, therefore an APV might be a better model for the Iridium case. In Appendix 4 the outcome of the APV model is shown. The only forecast change relative to the

replicated DCF was a decrease in the revenue growth rate. The 15% during the forecast period was deemed too aggressive, and thus a more conservative growth rate of 8% was assumed.

Return on Asset: Five-year equity Betas, net debt, cash, market-cap and minority share values from comparable companies, based on CapitalIQ data from January 1st, 2010, were utilized to arrive at an equity Beta of 1.22 for Iridium. An estimated debt Beta of 0.1 was used in the Capital Asset Pricing (CAPM) model to arrive at long-term cost of debt of 3.68%. To calculate the return on equity, the CAPM was used with the equity Beta of 1.22 mentioned earlier. Given that the forecast period is fifteen-years the thirty-year treasury yield of 3.15% was used as the risk-free rate. The market-risk premium of 5.3%, was utilized given that it was the rate used at the time (Fernandez et al., 2010). The return on equity was calculated as 9.63%. With a target capital structure of 10%, a return on assets of 9.3% was calculated.

Tax-shield during the forecast period: A tax-shield was calculated with the forecasted interest payments, a tax-rate of 35%, and discounted with the 9.3% return on assets. Because Iridium's changing debt structure, the return on assets was utilized rather than the return on debt.

Terminal value: Two terminal value calculations were performed. First, the terminal value of free cash flows was calculated using the median revenue and EBITDA multiples from Duff & Phelps. The forecasted 2025 revenue and EBITDA figures were used to calculate the terminal value with the median of the revenue and EBITDA multiples. The aim was to arrive at a conservative valuation, and thus a multiple was used rather than the perpetuity formula. The terminal tax shield was also calculated. Since the debt was repaid after the forecasted period, it was necessary to exclude tranche one and tranche two from the calculation. The long-term interest rate of 3.68% was used to calculate the interest payment in perpetuity. Along with the tax-rate of 35%, the present value of the terminal tax-shield was discounted by the 9.3% return assets.

Results: Using the fully diluted 87.8 million shares outstanding, a share price of \$13.2 was calculated. Further, an enterprise value of \$1,123.5 million was calculated.

11.3. Market Cap method

A third method, presented in the Iridium acquisition statement found in an SEC filing, simply calculated the equity value by multiplying the fully diluted shares outstanding with the share price. Subsequently, net debt was added to arrive at the enterprise valuation (*Iridium Communications Inc. Acquisition Statement SC TO-C*, 2008). Matt Desch said, "We were valued initially. This could [be] multiplied by the amount of stock by the \$10 initial price and

that was technically the valuation.” (Matt Desch, personal communication, 23 September 2022)
Table 3 shows the simple calculations.

Table 3: Market Cap method

(\$ in millions, except per share data)

	Iridium	
	Consideration to Existing Iridium Owners	Fully Distributed Post-Combination Valuation
Fully Diluted Shares Issued/Outstanding	38.3	87.8
x Share Price	\$10.00	\$10.00
Market Capitalization	\$382.9	\$877.6
Plus: Cash Acquisition Consideration	77.1	-
Equity Valuation	\$460.0	\$877.6
Plus: Net Debt	\$130.8	(\$72.4)
Enterprise Valuation	\$590.8	\$805.2

11.4. Conclusion: Iridium’s valuation

Bok described the negotiation process as cordial, yet fraught. The dynamics created by Iridium’s rocky past and the financial crisis played a clear role by limiting both parties’ options. Bok said, “The fact is I don’t think they had a lot of good alternatives. And the fact is I don’t think we had a lot of good alternatives and it was suddenly, from the time we did the IPO out [to the] time we were talking to them the world had changed in such a dramatic and negative way.” (Scott Bok, personal communication, 23 August 2022). The transaction, unanimously approved by both the Iridium and GHL Acquisition Boards of Directors, ultimately valued Iridium at an enterprise value of \$591 million (*Greenhill & Co.’s SPAC to Combine with Iridium, a Leading Provider of Voice and Data Mobile Satellite Services*, n.d.).

12. The SPAC IPO happens

On September 11, 2009, GHL Acquisition stated that it expected trading on the Nasdaq Stock Market (previously, the SPAC was traded on OTC markets) to begin on September 24, 2009, under the new IRDM symbol, finally marking the end of the merger. The special vote was

scheduled for September 23, 2009, at 4:00 pm, meaning that if the vote was successful, the company would immediately change its name. (*GHL Acquisition Corp. Announces Expected Transfer of Listing to Nasdaq*, n.d.). In the end, it was approved by the shareholder vote (Staff, 2008) and Iridium and closed on September 29, 2009. (*Shareholders Approve Iridium NASDAQ Deal*, n.d.)

13. External views

In this section, a brief look at how the markets, press, and other participants and commentators viewed the merger shall be presented. Interestingly, not many articles about the shareholder vote, but about the acquisition announcement could be found, indicating that the press and media did not really take into account the approval of the shareholder vote.

Whilst some professional news magazines like PE Hub saw the deal very neutrally (Staff, 2008), other professional magazines were very surprised about this deal. Private Equity International for example noted that this was one “of the largest SPAC acquisitions to be made in recent months, as the merger and acquisitions market has withered and hedge funds [...] have backed away from the vehicles” (Levin, 2013). This further demonstrates that this deal announcement was not something regular due to the financial crisis. In addition, it also further demonstrates, that whereas other options like M&A and IPO did not seem to work at that time in this scale, this specific SPAC could work. One reason for that was probably also the stability of Greenhill, as hinted in the same newspaper. “Greenhill has avoided most of the panic in the public market that has brought down many of its larger investment banking brethren in recent weeks. At the announcement date, [September 23, 2008] the New York-based company was trading at \$73 per share, up roughly 7% over the last 30 days.” (Levin, 2013) Other newspapers at that time also highlighted the reasoning for this merger, namely the production of IridiumNEXT. In addition, the former bankruptcy was also a topic for newspapers, also showing that the public did not forget about the bankruptcy nearly a decade earlier (Fierce Telecom, 2008).

In summary, it is indicative that this merger at this specific time was something special due to the difficult circumstances and the checkered past of the company, itself. However, it also shows that the media mostly focused on the acquisition announcement and less so on the actual outcome of the shareholder vote, which is indicated by the smaller number of press articles about that. This is an interesting fact, since many SPACs failed to get shareholder approval, meaning that after the acquisition announcement, the deal could still fall through on the final vote.

14. Epilogue

Matt Desch chose SpaceX to launch the Iridium NEXT constellation and described the first launch on January 14, 2017 as something of a near death experience. The previous SpaceX launch had blown up on the launchpad and Desch said “You can imagine what my first launch was like, wondering with Elon there himself, wondering if our \$250 million of fresh new satellites were going to reach orbit or not” (Matt Desch, personal communication, 15 August 2022). Regarding the failed launch, according to Niehaus, Elon Musk had instructed SpaceX to reduce the number of giant coolant refrigerators at the base of the rocket from four to three to cut down on cost. The idea being that three refrigerators at lower temperatures could perform similarly to four refrigerators at higher temperatures. Unfortunately, the idea didn’t pan out and the Falcon 9 rocket launch, carrying an Israeli payload, failed and exploded (Robert Niehaus, personal communication, 14 September 2022).

The first launch went according to plan, and on January 11, 2019, Iridium concluded its satellite launch campaign with zero failed launches, and on February 5, 2019, the constellation upgrade was successfully completed (*Iridium Museum*, n.d.). Bok relayed that “So many things could have gone wrong and the investment would have been wiped out... Matt deserves a lot of credit for that. But frankly, we also had a fair amount of luck” (Scott Bok, personal communication, 23 August 2022).

Beyond the capital raised from the SPAC, Matt Desch and Iridium received help from the French. After inviting bidders for the satellite manufacturing contract, Desch selected Thales Alenia Space. Thales was backed by the French government and banking system and the French Export-Import bank Compagnie Française d'Assurance pour le Commerce Extérieur (COFACE). The French were eager to both win the contract and be leaders in space, and thus a consortium of French banks, led by Société Générale set up a \$1.8 billion credit facility for Iridium of which 95% was guaranteed by COFACE. The remaining funding needs were met by Iridium’s own cash flow (Bloom, 2017). Scott Bok’s summarized the Iridium investment case as follows,

You know, we thought that the old satellites would last longer than people thought. We thought that the new ones could be developed. We thought that we could find somebody to launch them in an effective way. We thought we would get lucky and avoid any terrible accidents. We thought we would raise the money for all of that. We thought we would be able to grow significantly [in machine to machine communication]. We thought that the US government would continue to be a strong core customer. Every single one of those assumptions was correct. The only assumption that was incorrect is

that it took us a very long time to convince the world that we were right about those assumptions (Scott Bok, personal communication, 23 August 2022).

Coming back to the proverbial phoenix mentioned in the Iridium museum (*Iridium Museum*, n.d.), it's now easier to understand how such a grandiose statement is applicable to Iridium.

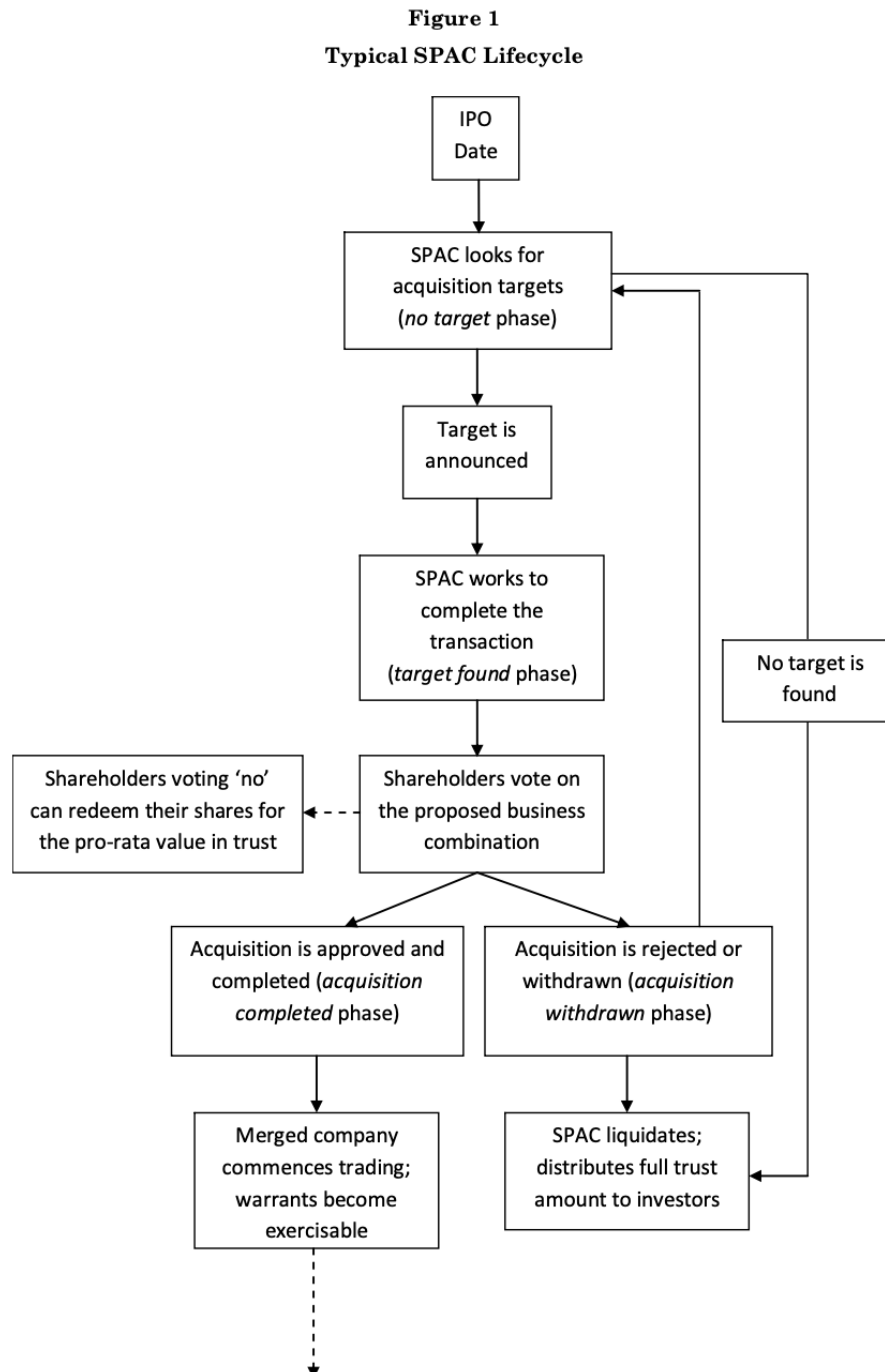
15. Conclusion

This paper analyzed the SPAC IPO of Iridium satellite communications by using interviews with the responsible persons, financial sources, and theoretical literature to explain the structure, return characteristics, and success factors of SPACs. This paper finds that Iridium was a special company for a SPAC. Although the structure of the SPAC shell company was similar to many SPACs of the same generation, Iridium became a SPAC success story due to its strong operational success and the successful implementation of the new satellite generation, IridiumNEXT.

Although the SPAC structure might have some drawbacks in terms of dilution and less attractive return characteristics, when compared to a normal IPO, it has the strong advantage of available cash, which, particularly in an illiquid market situation, is very valuable. It became very clear in the interviews that this specific SPAC was the only solution feasible for all parties involved. In conclusion, a SPAC offers an additional option for companies to go public, and in critical situations, it might be the only financing option available.

16. Appendix:

Appendix 1: Figure 1 SPAC lifecycle before tender offer (or: the Iridium SPAC lifecycle) (S. Lewellen, 2009)



Appendix 2

Mobile Satellite Services (composed of Globalstar, Inmarsat and Orbcomm)

Ratio of Enterprise value to:	Low	Median	Mean	High
LTM Revenue	4.48x	5.19x	5.97x	8.24x
Estimated 2008 Revenue	4.40x	6.27x	6.72x	9.49x
Estimated 2009 Revenue	2.98x	5.87x	5.87x	8.77x
LTM EBITDA	14.2x	23.5x	23.5x	32.9x
Estimated 2008 EBITDA	14.2x	14.2x	14.2x	14.2x
Estimated 2009 EBITDA	10.3x	11.7x	11.7x	13.0x

Fixed Satellite Services (composed of Eutelsat Communications, S.A. and SES, S.A.)

Ratio of Enterprise value to:	Low	Median	Mean	High
LTM Revenue	5.86x	6.80x	6.80x	7.73x
Estimated 2008 Revenue	5.46x	6.13x	6.13x	6.81x
Estimated 2009 Revenue	5.12x	5.88x	5.88x	6.63x
LTM EBITDA	8.5x	9.1x	9.1x	9.7x
Estimated 2008 EBITDA	8.0x	8.3x	8.3x	8.6x
Estimated 2009 EBITDA	7.4x	7.7x	7.7x	8.1x

The transactions selected by Duff & Phelps

<u>Date Announced</u>	<u>Acquiror Name/Seller</u>
February 12, 2008	Sky Perfect JSAT Corporation/Space Communications Corporation
June 19, 2007	BC Partners/Intelsat Ltd.
December 16, 2006	Loral Space & Communications, Inc./Telesat Canada
October 26, 2006	Sky Perfect Communications, Inc./JSAT Corp.
December 14, 2005	SES Global SA/New Skies Satellite Holdings Ltd.
August 28, 2005	Intelsat Ltd./PanAmSat Holding Corporation
August 16, 2004	Apax, Apollo, Madison Dearborn, Permira/Intelsat Ltd.
June 6, 2004	The Blackstone Group/New Skies Satellites NV
April, 20, 2004	Kohlberg Kravis Robert & Co./PanAmSat Holding Corporation

The transactions multiples

	<u>Enterprise Value as a Multiple of:</u>	
	<u>LTM Revenue</u>	<u>LTM EBITDA</u>
High	8.86x	12.9x
Median	5.13x	8.2x
Mean	5.56x	9.2x
Low	3.30x	7.0x

Duff & Phelps DCF output

Initial Case		
Discount rate		
15%	14%	13%
\$890 million	\$1,070 million	\$1,300 million

Downside Case		
Discount rate		
15%	14%	13%
\$460 million	\$570 million	\$720 million

Appendix 3 (key outputs from the replicated DCF)

Discounted Cash Flow																			
WACC		13.0%																	
g		2.0%																	
\$ in Mio.		2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
UFCE		62.6	(438.8)	(290.6)	(227.1)	(207.2)	(183.4)	(154.8)	(120.5)	(79.6)	(30.8)	27.3	427.9	510.1	607.6	723.1	860.1	1,022.1	1,213.6
Discount factor				0.88	0.78	0.69	0.61	0.54	0.48	0.43	0.38	0.33	0.29	0.26	0.23	0.20	0.18	0.16	0.14
Present value of UFCF				(257.1)	(177.8)	(143.6)	(112.5)	(84.0)	(57.9)	(33.8)	(11.6)	9.1	126.1	133.0	140.2	147.6	155.4	163.4	171.7
DCF Valuation																			
PV of Cash flows		168.09																	
Terminal Value		11,253.83																	
PV of Terminal Value		1,592.37																	
Enterprise value		1,760.46																	
O Financial liabilities		(109.99)																	
Cash		147.18																	
Equity value		1,797.65																	
# shares in m		87.80																	
Value per share		20.47																	

Cash Flow Statement

	2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
\$ in Mio.																		
EBIT	75.1	53.1	106.9	133.8	166.1	204.8	251.0	306.2	372.0	450.3	543.4	564.0	695.1	850.5	1,034.5	1,252.1	1,509.3	1,813.0
Operating taxes	(2.0)	9.0	(37.4)	(46.8)	(58.1)	(71.7)	(87.8)	(107.2)	(130.2)	(157.6)	(190.2)	(197.4)	(243.3)	(297.7)	(362.1)	(438.2)	(528.3)	(634.6)
Operating tax rate	(0.0)	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
NOPAT	73.2	62.1	69.5	87.0	108.0	133.1	163.1	199.0	241.8	292.7	353.2	366.6	451.8	552.9	672.4	813.9	981.0	1,178.5
Add-back D&A	12.5	32.4	20.3	20.9	21.6	22.4	23.1	23.9	24.7	25.5	26.3	117.2	118.1	119.0	119.9	120.9	121.9	122.9
Gross Cash Flow	85.7	94.5	89.8	107.9	129.6	155.5	186.3	222.9	266.5	318.2	379.5	483.8	569.9	671.8	792.4	934.8	1,102.9	1,301.4
Inventory	(15.7)	12.8	(1.7)	(3.3)	(3.7)	(4.1)	(4.6)	(5.1)	(5.6)	(6.2)	(6.9)	(7.6)	(8.4)	(9.2)	(10.1)	(11.1)	(12.1)	(13.2)
Trade receivables	(5.9)	(0.7)	(6.3)	(7.2)	(8.3)	(9.5)	(10.9)	(12.6)	(14.5)	(16.6)	(19.1)	(22.0)	(25.3)	(29.1)	(33.5)	(38.5)	(44.3)	(50.9)
Trade payables	4.3	1.2	0.5	1.0	1.1	1.3	1.4	1.6	1.7	1.9	2.1	2.3	2.6	2.8	3.1	3.4	3.7	4.0
Accrued Expenses	(4.3)	37.2	(12.6)	6.6	7.5	8.7	10.0	11.5	13.2	15.2	17.5	20.1	23.1	26.6	30.5	35.1	40.4	46.4
Unearned Revenue, Current	1.2	(12.6)	(20.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Investments in working capital	(20.4)	38.0	(40.1)	(2.9)	(3.3)	(3.7)	(4.1)	(4.6)	(5.2)	(5.8)	(6.4)	(7.2)	(8.0)	(8.9)	(9.9)	(11.0)	(12.3)	(13.6)
Investments in other assets/liabilities	13.5	(14.7)	(10.0)	(3.7)	(4.2)	(4.9)	(5.6)	(6.4)	(7.4)	(8.5)	(9.8)	(11.2)	(12.9)	(14.9)	(17.1)	(19.6)	(22.6)	(26.0)
Capex	(15.7)	(370.8)	(326.5)	(327.3)	(328.0)	(328.8)	(329.6)	(330.4)	(331.2)	(332.1)	(333.0)	(33.9)	(34.9)	(35.8)	(36.9)	(37.9)	(39.0)	(40.1)
Other investments	1.6	(151.5)	(3.7)	(1.1)	(1.3)	(1.5)	(1.7)	(2.0)	(2.3)	(2.6)	(3.0)	(3.5)	(4.0)	(4.6)	(5.3)	(6.1)	(7.0)	(8.1)
Extraordinary items	(2.1)	(34.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UFCF	62.6	(438.8)	(290.6)	(227.1)	(207.2)	(183.4)	(154.8)	(120.5)	(79.6)	(30.8)	27.3	427.9	510.1	607.6	723.1	860.1	1,022.1	1,213.6
Interest expenses	(21.2)	(11.2)	(6.8)	(18.6)	(28.7)	(38.8)	(49.0)	(59.1)	(69.3)	(78.7)	(85.6)	(88.3)	(88.7)	(89.1)	(89.6)	(90.1)	(90.6)	(91.2)
Delta Taxes vs. Operating taxes	0.6	(7.7)	2.4	6.5	10.1	13.6	17.1	20.7	24.3	27.6	30.0	30.9	31.0	31.2	31.3	31.5	31.7	31.9
Delta long-term liabilities	(5.0)	(100.5)	207.5	210.2	211.5	212.9	214.6	216.5	218.7	221.1	224.0	27.3	31.0	35.3	40.2	45.8	52.2	59.6
Delta Equity (incl. dividends)	(34.2)	680.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minority Interest in Earnings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Cash Flow	2.7	122.4	(87.5)	(29.0)	(14.4)	4.3	28.0	57.5	94.0	139.1	195.6	397.7	483.4	584.9	705.1	847.3	1,015.4	1,214.0
Opening cash	22.1	24.8	147.2	59.8	30.8	16.4	20.7	48.7	106.2	200.2	339.4	535.0	932.7	1,416.1	2,001.0	2,706.1	3,553.4	4,568.9
Closing cash	24.8	147.2	59.8	30.8	16.4	20.7	48.7	106.2	200.2	339.4	535.0	932.7	1,416.1	2,001.0	2,706.1	3,553.4	4,568.9	5,782.8
B / S	24.8	147.2	59.7	30.8	16.4	20.7	48.7	106.2	200.1	339.3	534.9	932.7	1,416.0	2,000.9	2,706.0	3,553.4	4,568.8	5,782.8

P&L

\$ in Mio.	2006A	2007A	2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Revenues	212.4	260.9	320.9	318.9	369.1	424.4	488.1	561.3	645.5	742.4	853.7	981.8	1,129.0	1,298.4	1,493.2	1,717.1	1,974.7	2,270.9	2,611.5	3,003.3
Other revenues	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total revenues	212.4	260.9	320.9	318.9	369.1	424.4	488.1	561.3	645.5	742.4	853.7	981.8	1,129.0	1,298.4	1,493.2	1,717.1	1,974.7	2,270.9	2,611.5	3,003.3
Cost of goods sold	(120.8)	(126.1)	(137.5)	(129.9)	(146.6)	(164.3)	(184.1)	(206.1)	(230.6)	(257.7)	(287.9)	(321.2)	(358.1)	(398.8)	(443.7)	(493.1)	(547.3)	(606.7)	(671.6)	(742.3)
Gross margin	91.7	134.8	183.5	189.1	222.5	260.1	304.0	355.2	415.0	484.6	565.9	660.6	770.9	899.6	1,049.4	1,224.0	1,427.4	1,664.2	1,939.9	2,260.9
Operating expenses	(37.9)	(60.3)	(95.8)	(103.6)	(95.3)	(105.4)	(116.3)	(128.1)	(140.9)	(154.6)	(169.2)	(184.8)	(201.2)	(218.4)	(236.2)	(254.5)	(272.9)	(291.2)	(308.7)	(325.0)
EBITDA	53.8	74.6	87.7	85.5	127.2	154.8	187.7	227.1	274.1	330.1	396.6	475.8	569.7	681.2	813.2	969.5	1,154.4	1,373.0	1,631.2	1,935.9
D&A	(8.5)	(11.4)	(12.5)	(32.4)	(20.3)	(20.9)	(21.6)	(22.4)	(23.1)	(23.9)	(24.7)	(25.5)	(26.3)	(117.2)	(118.1)	(119.0)	(119.9)	(120.9)	(121.9)	(122.9)
EBIT	45.2	63.2	75.1	53.1	106.9	133.8	166.1	204.8	251.0	306.2	372.0	450.3	543.4	564.0	695.1	850.5	1,034.5	1,252.1	1,509.3	1,813.0
Interest expense	(13.4)	(19.4)	(21.2)	(11.2)	(6.8)	(18.6)	(28.7)	(38.8)	(49.0)	(59.1)	(69.3)	(78.7)	(85.6)	(88.3)	(88.7)	(89.1)	(89.6)	(90.1)	(90.6)	(91.2)
Extraordinary income	-	-	(2.1)	(34.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBT	31.8	43.8	51.8	7.8	100.1	115.2	137.4	165.9	202.0	247.1	302.7	371.6	457.8	475.7	606.4	761.4	945.0	1,162.1	1,418.7	1,721.8
Tax rate	-	-	(0.0)	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Taxes	-	-	(1.4)	1.3	(35.0)	(40.3)	(48.1)	(58.1)	(70.7)	(86.5)	(105.9)	(130.1)	(160.2)	(166.5)	(212.3)	(266.5)	(330.7)	(406.7)	(496.5)	(602.6)
Minority Interest in Earnings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net income	31.8	43.8	50.4	9.1	65.1	74.9	89.3	107.8	131.3	160.6	196.7	241.5	297.6	309.2	394.2	494.9	614.2	755.3	922.1	1,119.2

Balance Sheet

\$ in Mio.	2006A	2007A	2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Intangible assets	11.9	10.7	34.0	187.1	190.3	193.4	196.7	199.9	203.3	206.7	210.1	213.6	217.2	220.8	224.5	228.2	232.0	235.9	239.8	243.8
Net PP&E	60.0	63.1	63.2	401.6	704.8	1,007.9	1,311.0	1,614.2	1,917.3	2,220.4	2,523.5	2,826.7	3,129.8	3,042.9	2,956.1	2,869.2	2,782.3	2,695.5	2,608.6	2,521.7
Financial assets	5.9	5.5	5.5	3.9	7.6	8.8	10.1	11.6	13.4	15.4	17.7	20.3	23.4	26.9	30.9	35.5	40.9	47.0	54.0	62.1
Inventory	14.2	29.8	38.5	25.7	27.4	30.7	34.4	38.5	43.0	48.1	53.7	60.0	66.8	74.4	82.8	92.0	102.2	113.2	125.4	138.6
Trade receivable	35.1	41.0	41.0	41.7	47.9	55.1	63.4	72.9	83.9	96.4	110.9	127.5	146.7	168.7	194.0	223.1	256.5	295.0	339.3	390.2
Other assets	18.4	15.5	15.5	19.1	24.5	28.2	32.4	37.2	42.8	49.2	56.6	65.1	74.9	86.1	99.0	113.9	131.0	150.6	173.2	199.2
Cash and equivalents	22.1	24.8	24.8	147.2	59.7	30.8	16.4	20.7	48.7	106.2	200.1	339.3	534.9	932.7	1,416.0	2,000.9	2,706.0	3,553.4	4,568.8	5,782.8
Total Assets	167.6	190.6	222.6	826.4	1,062.2	1,354.8	1,664.3	1,995.0	2,352.3	2,742.4	3,172.7	3,652.5	4,193.6	4,552.5	5,003.3	5,562.9	6,250.9	7,090.6	8,109.0	9,338.3
Accounts Payable	2.4	6.7	6.7	7.9	8.4	9.4	10.5	11.8	13.2	14.7	16.5	18.4	20.5	22.8	25.4	28.2	31.3	34.7	38.4	42.5
Accrued Exp.	28.3	24.0	19.2	56.4	43.8	50.3	57.9	66.6	76.5	88.0	101.2	116.4	133.9	153.9	177.0	203.6	234.1	269.3	309.6	356.1
Current Port. of LT Debt	12.9	30.4	30.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unearned Revenue, Current	24.2	25.4	32.7	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Current Liabilities	-	10.6	15.8	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Long-Term Debt	155.2	129.4	132.0	-	273.6	477.2	681.1	885.3	1,089.9	1,294.9	1,500.3	1,706.2	1,912.7	1,919.8	1,927.6	1,936.2	1,945.7	1,956.3	1,968.0	1,981.0
Def. Tax Liability, Non-Curr.	-	-	22.4	93.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Non-current Liabilities	23.1	26.4	25.7	16.7	43.9	50.5	58.1	66.8	76.8	88.3	101.6	116.8	134.3	154.5	177.7	204.3	234.9	270.2	310.7	357.3
Total Liabilities	246.0	252.8	284.8	198.9	369.7	587.4	807.6	1,030.5	1,256.4	1,486.0	1,719.6	1,957.8	2,201.4	2,251.0	2,307.7	2,372.3	2,446.1	2,530.4	2,626.8	2,736.9
Total Equity	(78.4)	(62.2)	(62.2)	627.5	692.6	767.5	856.8	964.6	1,095.9	1,256.5	1,453.2	1,694.8	1,992.4	2,301.5	2,695.7	3,190.6	3,804.9	4,560.2	5,482.3	6,601.5
Total Liabilities & Equities	167.6	190.6	222.6	826.4	1,062.2	1,354.9	1,664.4	1,995.1	2,352.4	2,742.5	3,172.8	3,652.6	4,193.7	4,552.6	5,003.4	5,563.0	6,251.0	7,090.6	8,109.1	9,338.4

Appendix 4 (key outputs from APV)

Discounted Cash Flow

ra 9.0%

\$ in Mio.	2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
UFCF	62.6	(438.8)	(292.2)	(234.9)	(223.3)	(210.3)	(195.8)	(179.6)	(161.6)	(141.5)	(119.2)	237.1	264.7	295.3	329.2	366.7	408.3	454.4
Tax shield	7.4	3.9	2.4	6.5	10.0	13.5	17.1	20.6	24.1	27.4	29.9	30.9	31.0	31.0	31.1	31.2	31.3	31.4
Total	70.0	(434.9)	(289.9)	(228.4)	(213.3)	(196.8)	(178.7)	(159.0)	(137.5)	(114.1)	(89.3)	268.0	295.6	326.3	360.3	397.9	439.6	485.7
Discount factor	-	-	0.9	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Present value of UFCF	-	-	(265.8)	(192.1)	(164.5)	(139.2)	(116.0)	(94.7)	(75.1)	(57.1)	(41.0)	112.9	114.2	115.6	117.1	118.6	120.2	121.8

DCF Valuation	
PV of Cash flows	(325.29)
Terminal Value	5,726.28
Terminal Tax Shield	53.34
PV of Terminal Value	1,448.83
Enterprise value	1,123.53
() Financial liabilities	(109.99)
Cash	147.18
Equity value	1,160.72
# shares in m	87.80
Value per share	13.22

	Terminal Value
	EV/ Revenue
High	8.86
Median	5.13
Mean	5.56
Low	3.30
Median	5.13
Valuation	5,640.62
Revenue 2025	1099.535736
EBITDA 2025	708.774031

	Terminal Tax shield
Year	2025
Debt	1,930.93
COF ACE Adjustment	(1,800.00)
Long-term Debt	130.93
Long-term Interest	3.68%
Valuation	53.34

Date	01.01.10												
WACC	Equity beta	5Y	LTM EV	LTM Net Debt	Cash	Debt	Market Cap	Minority	D/V	E/V	Debt beta	Asset Beta	
Cogent Comm	1.71		553.60	120.00	55.90		175.90	433.60	-	32%	68%	0.20	1.23
Motorola Sol	1.83		22,209.90	4,169.00	2,869.00		7,038.00	17,932.90	108.00	32%	68%	0.20	1.31
Comtech Tele	0.40		1,289.70	300.10	485.50		785.60	989.60	-	61%	39%	0.25	0.31
ADTRAN Ho	1.10		1,566.00	148.90	24.10		173.00	1,417.10	-	11%	89%	0.10	0.99
Viasat, Inc. (I	1.16		1,497.90	344.60	63.50		408.10	1,149.50	3.80	27%	73%	0.20	0.90
Globalstar, In	2.40		536.70	397.90	67.90		465.80	138.80	-	87%	13%	0.30	0.58
EchoStar Cor	0.33		2,557.80	850.00	23.30		873.30	1,707.80	-	34%	66%	0.15	0.27
Average/Med	-	-	-	-	-	-	-	-	-	32%	68%	0.20	1.11
Target	1.22		-	-	-	-	-	-	-	10%	90%	0.10	1.11
													(Adjusted Asset beta)

	Percentage		Note		Sources	
	MRP	risk-free	tax	Use average industry	MRP	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1609563
re	9.63%			5.30%		
rd	3.68%			3.15% rf US 30-yr		https://www.macrotrends.net/2521/30-year-treasury-bond-rate-yield-chart
ra	9.03%			35.00% Take corporate tax rate 2009 US/	https://obliviousinvestor.com/corporate-tax-rates/	

Cash Flow Statement

	2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
\$ in Mio.																		
EBIT	75.1	53.1	99.2	115.5	133.9	154.3	177.1	202.6	230.9	262.4	297.4	246.3	289.5	337.3	390.4	449.1	514.0	585.8
Operating taxes	(2.0)	9.0	(34.7)	(40.4)	(46.8)	(54.0)	(62.0)	(70.9)	(80.8)	(91.8)	(104.1)	(86.2)	(101.3)	(118.1)	(136.6)	(157.2)	(179.9)	(205.0)
Operating tax rate	(0.0)	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
NOPAT	73.2	62.1	64.5	75.1	87.0	100.3	115.1	131.7	150.1	170.6	193.3	160.1	188.2	219.3	253.7	291.9	334.1	380.8
Add-back D&A	12.5	32.4	20.3	20.9	21.6	22.4	23.1	23.9	24.7	25.5	26.3	117.2	118.1	119.0	119.9	120.9	121.9	122.9
Gross Cash Flow	85.7	94.5	84.7	96.1	108.6	122.7	138.2	155.5	174.7	196.0	219.6	277.3	306.2	338.2	373.7	412.8	456.0	503.7
Inventory	(15.7)	12.8	(0.0)	(1.4)	(1.4)	(1.5)	(1.5)	(1.6)	(1.6)	(1.7)	(1.7)	(1.7)	(1.8)	(1.8)	(1.8)	(1.9)	(1.9)	(1.9)
Trade receivables	(5.9)	(0.7)	(3.3)	(3.6)	(3.9)	(4.2)	(4.5)	(4.9)	(5.3)	(5.7)	(6.2)	(6.7)	(7.2)	(7.8)	(8.4)	(9.1)	(9.8)	(10.6)
Trade payables	4.3	1.2	0.0	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Accrued Expenses	(4.3)	37.2	(15.3)	3.3	3.6	3.8	4.1	4.5	4.8	5.2	5.6	6.1	6.6	7.1	7.7	8.3	8.9	9.7
Unearned Revenue, Current	1.2	(12.6)	(20.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Investments in working capital	(20.4)	38.0	(38.7)	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	(1.6)	(1.7)	(1.7)	(1.8)	(1.9)	(1.9)	(2.0)	(2.1)	(2.1)	(2.2)
Investments in other assets/liabilities	13.5	(14.7)	(8.5)	(1.8)	(2.0)	(2.1)	(2.3)	(2.5)	(2.7)	(2.9)	(3.2)	(3.4)	(3.7)	(4.0)	(4.3)	(4.6)	(5.0)	(5.4)
Capex	(15.7)	(370.8)	(326.5)	(327.3)	(328.0)	(328.8)	(329.6)	(330.4)	(331.2)	(332.1)	(333.0)	(33.9)	(34.9)	(35.8)	(36.9)	(37.9)	(39.0)	(40.1)
Other investments	1.6	(151.5)	(3.2)	(0.6)	(0.6)	(0.7)	(0.7)	(0.8)	(0.8)	(0.9)	(1.0)	(1.1)	(1.1)	(1.2)	(1.3)	(1.4)	(1.6)	(1.7)
Extraordinary items	(2.1)	(34.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UFCF	62.6	(438.8)	(292.2)	(234.9)	(223.3)	(210.3)	(195.8)	(179.6)	(161.6)	(141.5)	(119.2)	237.1	264.7	295.3	329.2	366.7	408.3	454.4
Interest expenses	(21.2)	(11.2)	(6.8)	(18.6)	(28.6)	(38.7)	(48.8)	(58.9)	(68.9)	(78.3)	(85.4)	(88.3)	(88.5)	(88.7)	(88.9)	(89.2)	(89.4)	(89.6)
Delta Taxes vs. Operating taxes	0.6	(7.7)	2.4	6.5	10.0	13.5	17.1	20.6	24.1	27.4	29.9	30.9	31.0	31.0	31.1	31.2	31.3	31.4
Delta long-term liabilities	(5.0)	(100.5)	204.2	206.1	206.5	206.9	207.4	207.8	208.3	208.9	209.4	10.1	10.7	11.4	12.2	13.0	13.9	14.8
Delta Equity (incl. dividends)	(34.2)	680.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minority Interest in Earnings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Cash Flow	2.7	122.4	(92.4)	(40.8)	(35.4)	(28.5)	(20.2)	(10.1)	1.9	16.4	34.7	189.8	217.9	249.0	283.6	321.8	364.1	410.9
Opening cash	22.1	24.8	147.2	54.8	14.0	(21.4)	(50.0)	(70.1)	(80.2)	(78.3)	(61.9)	(27.2)	162.6	380.5	629.5	913.1	1,234.9	1,599.0
Closing cash	24.8	147.2	54.8	14.0	(21.4)	(50.0)	(70.1)	(80.2)	(78.3)	(61.9)	(27.2)	162.6	380.5	629.5	913.1	1,234.9	1,599.0	2,010.0
B / S	24.8	147.2	54.7	13.9	(21.4)	(50.0)	(70.1)	(80.2)	(78.3)	(61.9)	(27.2)	162.6	380.4	629.5	913.0	1,234.8	1,599.0	2,009.9

P&L

\$ in Mio.	2006A	2007A	2008A	2009A	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Revenues	212.4	260.9	320.9	318.9	346.6	374.3	404.3	436.6	471.6	509.3	550.0	594.0	641.6	692.9	748.3	808.2	872.8	942.7	1,018.1	1,099.5
Other revenues	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total revenues	212.4	260.9	320.9	318.9	346.6	374.3	404.3	436.6	471.6	509.3	550.0	594.0	641.6	692.9	748.3	808.2	872.8	942.7	1,018.1	1,099.5
Cost of goods sold	(120.8)	(126.1)	(137.5)	(129.9)	(137.7)	(144.9)	(152.5)	(160.3)	(168.4)	(176.8)	(185.5)	(194.4)	(203.5)	(212.8)	(222.4)	(232.1)	(241.9)	(251.9)	(261.8)	(271.8)
Gross margin	91.7	134.8	183.5	189.1	209.0	229.4	251.8	276.3	303.1	332.5	364.6	399.7	438.1	480.1	525.9	576.1	630.9	690.8	756.3	827.8
Operating expenses	(37.9)	(60.3)	(95.8)	(103.6)	(89.5)	(92.9)	(96.3)	(99.6)	(102.9)	(106.0)	(109.0)	(111.8)	(114.3)	(116.6)	(118.4)	(119.8)	(120.6)	(120.9)	(120.3)	(119.0)
EBITDA	53.8	74.6	87.7	85.5	119.4	136.5	155.5	176.7	200.2	226.4	255.6	287.9	323.7	363.5	407.5	456.3	510.3	570.0	635.9	708.8
D&A	(8.5)	(11.4)	(12.5)	(32.4)	(20.3)	(20.9)	(21.6)	(22.4)	(23.1)	(23.9)	(24.7)	(25.5)	(26.3)	(117.2)	(118.1)	(119.0)	(119.9)	(120.9)	(121.9)	(122.9)
EBIT	45.2	63.2	75.1	53.1	99.2	115.5	133.9	154.3	177.1	202.6	230.9	262.4	297.4	246.3	289.5	337.3	390.4	449.1	514.0	585.8
Interest expense	(13.4)	(19.4)	(21.2)	(11.2)	(6.8)	(18.6)	(28.6)	(38.7)	(48.8)	(58.9)	(68.9)	(78.3)	(85.4)	(88.3)	(88.5)	(88.7)	(88.9)	(89.2)	(89.4)	(89.6)
Extraordinary income	-	-	(2.1)	(34.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBT	31.8	43.8	51.8	7.8	92.4	97.0	105.2	115.6	128.4	143.7	162.0	184.1	212.0	158.0	201.0	248.6	301.4	359.9	424.6	496.2
Tax rate	-	-	(0.0)	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Taxes	-	-	(1.4)	1.3	(32.3)	(33.9)	(36.8)	(40.5)	(44.9)	(50.3)	(56.7)	(64.4)	(74.2)	(55.3)	(70.3)	(87.0)	(105.5)	(126.0)	(148.6)	(173.7)
Minority Interest in Earnings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net income	31.8	43.8	50.4	9.1	60.1	63.0	68.4	75.1	83.4	93.4	105.3	119.7	137.8	102.7	130.6	161.6	195.9	233.9	276.0	322.5

Balance Sheet

\$ in Mio.	2007	2008	2009	2010	2011	2012	2012	2013	2013	2014	2014	2015	2015	2015	2016	2016	2017	2017	2018	2018	2019
Intangible assets	11.9	10.7	34.0	187.1	210.3	193.4	196.7	199.9	203.3	206.7	210.1	213.6	217.2	220.8	224.5	228.2	232.0	235.9	239.8	243.8	
Net PP&E	60.0	63.1	63.2	401.7	704.8	1,007.9	1,311.0	1,614.2	1,917.3	2,220.4	2,523.5	2,826.7	3,129.8	3,042.9	2,956.1	2,869.2	2,782.3	2,695.5	2,608.6	2,521.7	
Financial assets	5.9	5.5	5.5	3.9	7.2	7.7	8.4	9.0	9.8	10.5	11.4	12.3	13.3	14.3	15.5	16.7	18.1	19.5	21.1	22.7	
Inventory	14.2	29.8	38.5	25.7	25.7	27.1	28.5	29.9	31.4	33.0	34.6	36.3	38.0	39.7	41.5	43.3	45.2	47.0	48.9	50.7	
Trade receivable	35.1	41.0	41.0	41.7	45.0	48.6	52.5	56.7	61.3	66.2	71.5	77.2	83.3	90.0	97.2	105.0	113.4	122.5	132.3	142.8	
Other assets	18.4	15.5	15.5	19.1	23.0	24.8	26.8	29.0	31.3	33.8	36.5	39.4	42.6	46.0	49.6	53.6	57.9	62.5	67.5	72.9	
Cash and equivalents	22.1	24.8	24.8	147.2	54.7	13.9	(21.4)	(50.0)	(70.1)	(80.2)	(78.3)	(61.9)	(27.2)	162.6	380.4	629.5	913.0	1,234.8	1,599.0	2,009.9	
Total Assets	167.6	190.6	222.6	826.4	1,050.7	1,323.5	1,602.4	1,888.7	2,184.1	2,490.3	2,809.3	3,143.5	3,496.9	3,616.3	3,764.8	3,945.5	4,161.9	4,417.7	4,717.1	5,064.7	
Accounts Payable	2.4	6.7	6.7	7.9	7.9	8.3	8.7	9.2	9.6	10.1	10.6	11.1	11.6	12.2	12.7	13.3	13.8	14.4	15.0	15.6	
Accrued Exp.	28.3	24.0	19.2	56.4	41.1	44.4	47.9	51.8	55.9	60.4	65.2	70.4	76.1	82.2	88.7	95.8	103.5	111.8	120.7	130.4	
Current Port. of LT Debt	12.9	30.4	30.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Unearned Revenue, Current	24.2	25.4	32.7	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other Current Liabilities	-	10.6	15.8	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Long-Term Debt	155.2	129.4	132.0	-	272.9	475.8	678.7	881.8	1,085.0	1,288.3	1,491.8	1,695.4	1,899.2	1,903.2	1,907.3	1,911.6	1,916.1	1,920.8	1,925.8	1,930.9	
Def. Tax Liability, Non-Curr.	-	-	22.4	93.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other Non-current Liabilities	23.1	26.4	25.7	16.7	41.2	44.5	48.1	52.0	56.1	60.6	65.4	70.7	76.3	82.4	89.0	96.2	103.9	112.2	121.1	130.8	
Total Liabilities	246.0	252.8	284.8	198.9	-	363.2	783.5	994.7	1,206.6	1,419.4	1,633.1	1,847.7	2,063.3	2,079.9	2,097.8	2,116.9	2,137.3	2,159.2	2,182.6	2,207.7	
Total Equity	(78.4)	(62.2)	(62.2)	627.5	687.6	750.6	819.0	894.1	977.6	1,071.0	1,176.3	1,295.9	1,433.7	1,536.4	1,667.1	1,828.7	2,024.6	2,258.6	2,534.6	2,857.1	
Total Liabilities & Equities	167.6	190.6	222.6	826.4	1,050.7	1,323.6	1,602.5	1,888.8	2,184.2	2,490.4	2,809.3	3,143.6	3,497.0	3,616.4	3,764.9	3,945.6	4,161.9	4,417.7	4,717.2	5,064.8	

Appendix 5 – Analysis Iridium returns in comparison with same SPAC generation

SPAC Dimitrova (2017)					
SPAC	Target	Today's name	Status	Date of Acq. Acquirer	
Millstream Acquisition Corp.	Nations Health Holdings LLC	Convey Health Solutions, Inc.	Acquired		
CEA Acquisition Corp.	Erials Worldwide Inc.	IBM Watson Health	Acquired		
Chardan China Acquisition Corp.	State Harvest Holdings Ltd.	Origin Agritech Limited (NasdaqCM:SEED)	Original		
Great Wall Acquisition Corp.	ChinaCast Communication Holdings Ltd.		Bankrupt	09.11.16	
Tremiss Energy Acquisition Corp.	Ram Energy Inc.	Battalion Oil Corporation (NYSE:AMBATL)	Acquired		
Arpeggio Acquisition Corp.	Hill International Inc.	Hill International, Inc. (NYSE:HIL)	Original		
Rand Acquisition Corp.	Lower Lakes Towing Ltd.	Rand Logistics, Inc.	Acquired	17.02.21	Private Oaktree Capital
China Unistone Acquisition Corp.	Beijing e-Channels Century	Yucheng Technologies Limited	Acquired		
Mercator Partners Acquisition Corp.	European Telecommunications & Technology Ltd	GTT Communications, Inc. (OTCPK:GTTN.Q)	Bankrupt	31.10.21	
Terra Nova Acquisition Corp.	Clear Point Business Resources Inc.	TerraNova Partners LP	Acquired		PE
KBL Healthcare Acquisition Corp. II	Summer Infant Inc.	Kids2 Inc.	Acquired recently	22.06.22	Summer Infant Inc.
Services Acquisition Corp.	Jamba Juice Co.		No information		
Courtside Acquisition Corp.	American Community Newspapers LLC	American Community Newspapers Inc. (OTCPK:ACNI)	Original		
Oakmont Acquisition Corp.	Brooke Credit Corp.		Bankrupt	28.10.08	
Israel Technology Acquisition Corp.	IXI Mobile Inc.	Runcom Technologies Ltd.	Acquired	08.01.09	
Fortress America Acquisition Corp.	UTC LLC	Ultimate Escapes Inc.	Bankrupt	03.01.12	
Juniper Partners Acquisition Corp.	Firestone Communications Inc.	Juniper Content Corporation	Acquired	11.02.09	Centripetal Capital Partners
Echo Healthcare Acquisition Corp.	XLNT Veterinary Care Inc.	Mars	Acquired	02.06.10	Pet DRx
Healthcare Acquisition Corp.	PharmAdhere Inc.	Alimmune Inc.	Acquired	04.05.17	
Chardan North China Acquisition Corp.	Beijing HollySys Co Ltd.	Hollysys Automation Technologies Ltd. (NasdaqGS:HOLI)	Original		
Stone Arcade Acquisition Corp.	Kraft Paper Business		No information		
Ithaka Acquisition Corp.	Alsus Corp	Asahi Kasei	Acquired	04.05.09	Zoll Medical Corporation
Ad.Venture Partners Inc.	180 Connect Inc.		Private again	28.01.10	
Chardan South China Acquisition Corp.	Head Dragon Holdings Ltd.		Private again	31.10.10	
Coconut Palm Acquisition Corp.	Equity Broadcasting Corp		Bankrupt	08.12.08	
Viceroy Acquisition Corp.	Eastman SE Inc.		No information		
Federal Services Acquisition Corp.	Advanced Technology Systems Inc.		Acquired	30.11.12	CM Equity
Paramount Acquisition Corp.	Chem Rx Corp.		Bankrupt	29.04.11	
Platinum Energy Resources Inc.	Tandem Energy Corp.	Pacific International Group Holdings	Acquired	19.01.10	Platinum Energy Resources Inc.
Endeavor Acquisition Corp.	American Apparel Inc.		Bankrupt	14.12.18	
Star Maritime Acquisition Corp.	Star Bulk Carriers Corp	Star Bulk Carriers Corp. (NasdaqGS:SBLK)	Original		
Boulder Specialty Brands Inc.	GFA Holdings Inc.	Conagra Brands Inc.	Acquired	21.05.07	Boulder Brands
Argyle Security Acquisition Corp.	ISI Detention Contracting Group Inc.		No information		
Global Logistics Acquisition Corp.	Clark Group Inc.		Acquired	01.09.11	The Gores Group LLC
India Globalization Capital Inc.	Sricon Infrastructure Private Ltd.	India Globalization Capital, Inc. (NYSE:AM:IGC)	Original		
Acquiror Technology Inc.	Jazz Semiconductor Inc.	Tower Semiconductor Ltd. (NasdaqGS:TSEM)	Original		
Asia Automotive Acquisition Corp.	Hunan TX Enterprise Co. Ltd.	Tongxin International, Ltd. (OTCPK:TXIC)	Original		
Global Services Partners Acquisition Corp.	Southpeak Interactive LLC		No information		
Community Bankers Acquisition Corp.	Trans Community Financial Corp	Community Bankers Trust Corporation	Acquired recently	03.12.21	United Bankshares Inc.
Marathon Acquisition Corp.	Global Ship Lease Inc.	Global Ship Lease, Inc. (NYSE:GSL)	Original		
Energy Services Acquisition Corp.	ST Pipeline Inc.	Energy Services of America Corporation (NasdaqCM:ESOA)	Original		
Freedom Acquisition Holdings Inc.	GLG Partners LP		No information		
ChinaGrowth South Acquisition Corp.	Olympia Media Holdings Ltd.	China TopReach Inc	Delisting	23.07.12	
ChinaGrowth North Acquisition Corp.	UIB Group Ltd.	UIB Group Limited	Delisting	25.06.10	
Information Services Group Inc.	Technology Partners International Inc.	Information Services Group, Inc. (NasdaqGM:III)	Original		
Hyde Park Acquisition Corp.	Essex Holdings LLC		Delisting	30.08.17	
Symmetry Holdings Inc.	Novamerican Steel Inc.		No information		
China Opportunity Acquisition Corp.	Golden Green Enterprises Ltd.		Delisting	20.11.15	
Vectro Intersect Security Acquisition Corp.	Cyalume Technologies Ltd.	Cyalume Technologies Holdings, Inc.	Acquired recently	03.05.22	Cadre Holdings Inc.
Vantage Energy Services Inc.	Offshore Group Investments Ltd.	Vantage Drilling Company (OTCPK:VTGD.F)	Original		
Aldabra 2 Acquisition Corp.	Boise Cascade LLC	Packaging Corporation of America	Acquired	25.10.13	
Alyst Acquisition Corp.	China Networks Media Ltd.	China Networks International Holdings, Ltd. (OTCPK:CNWH)	Original		
Alternative Asset Management Acquisition Corp.	Great American Group LLC	B. Riley Financial, Inc. (NasdaqGM:RILY)	Original		
InterAmerican Acquisition Group Inc.	Sing Kung Ltd.		Delisting	05.09.13	
Hicks Acquisition Co. I Inc.	Resolute Natural Resources Co.	Coterra Energy Inc. (NYSE:CTRA)	Acquired	01.03.19	01.10.21
FMG Acquisition Corp.	United Insurance Holdings LLC	United Insurance Holdings Corp. (NasdaqCM:UHC)	Original		
TM Entertainment & Media Inc.	Hong Kong Mandefu Holdings Ltd.	China MediaExpress Holdings, Inc.	Delisting	28.08.12	
Global BPO Services Corp.	Stream Holdings Corp.	Concentrix Corporation (NasdaqGS:CNXC)	Acquired	03.03.14	
Triplecrown Acquisition Corp.	Cullen Agricultural Technologies Inc.	Long Blockchain Corp.	Acquired	27.05.15	
Secure America Acquisition Corp.	Ultimate Escapes Holdings LLC		Bankrupt	03.01.12	
Enterprise Acquisition Corp.	ARMOUR Merger Sub Corp.	ARMOUR Residential REIT, Inc. (NYSE:ARR)	Original		
Prospect Acquisition Corp.	Kennedy-Wilson Inc.	Kennedy-Wilson Holdings, Inc. (NYSE:KW)	Original		
China Holdings Acquisition Corp.	Gaoan Production Facility	Antelope Enterprise Holdings Limited (NasdaqCM:AEHL)	Original		
Ideation Acquisition Corp.	SearchMedia International Ltd.	Fluent, Inc. (NasdaqGM:FLNT)	Acquired	21.03.15	
Global Consumer Acquisition Corp.	Service1st Bank of Nevada Corp.	Bank of Nevada	Acquired	20.10.12	
Camden Learning Corp.	Diorah Inc.	National American University Holdings, Inc. (OTCPK:NAUH)	Original		
Liberty Acquisition Holdings Corp.	Promotora de Informaciones	Phoenix Group Holdings plc (LSE:PHNX)	Original		
Polaris Acquisition Corp.	Hughes Telematics Inc.	Verizon Communications Inc. (NYSE:VZ)	Acquired	21.06.16	
Asia Special Situation Acquisition Corp.	Amalphis Group Inc.		No information		
GHL Acquisition Corp.	Iridium Holdings LLC		Original		
BPW Acquisition Corp.	The Talbots Inc.	Alliance Data Systems Corporation	Acquired	03.08.12	
CS China Acquisition Corp.	Asia Gaming & Resort Ltd.	LiNiu Technology Group (OTCPK:LJNU.F)	Original		
Chardan 2008 China Acquisition Corp.	DAL Group LLC	DJSP Enterprises, Inc. (OTCPK:DJSP)	Original		

Status	# Companies	%
Acquired	23	31.51%
Original	23	31.51%
Bankrupt	8	10.96%
No information	8	10.96%
Private again	2	2.74%
Delisting	6	8.22%
Acquired recently	3	4.11%
Sum	73	100.00%

Companies	Share Pricing in %
Iridium Communications Inc. (NasdaqGS:IRDM) - Share Pricing	519.98
American Community Newspapers Inc. (OTCPK:ACNI) - Share Pricing	-95
Hill International, Inc. (NYSE:HIL) - Share Pricing	-44.11
Origin Agritech Limited (NasdaqCM:SEED) - Share Pricing	-56.9
Hollysys Automation Technologies Ltd. (NasdaqGS:HOLI) - Share Pricing	-23.32
Summer Infant, Inc. (NasdaqGM:SUMR) - Share Pricing	-60.7
India Globalization Capital, Inc. (NYSEAM:IGC) - Share Pricing	-67.98
Star Bulk Carriers Corp. (NasdaqGS:SBLK) - Share Pricing	-67.49
Tower Semiconductor Ltd. (NasdaqGS:TSEM) - Share Pricing	321.87
Community Bankers Trust Corporation (NasdaqGM:BTC) - Share Pricing	164.64
Tongxin International, Ltd. (OTCPK:TXIC) - Share Pricing	-100
Cyalume Technologies Holdings, Inc. (OTCPK:CYLU) - Share Pricing	112
Energy Services of America Corporation (NasdaqCM:ESOA) - Share Pricing	94.2
Global Ship Lease, Inc. (NYSE:GSL) - Share Pricing	-41.68
Information Services Group, Inc. (NasdaqGM:ISG) - Share Pricing	1.06
Vantage Drilling Company (OTCPK:VTGD.F) - Share Pricing	-99.99
B. Riley Financial, Inc. (NasdaqGM:RILY) - Share Pricing	470.07
United Insurance Holdings Corp. (NasdaqCM:UIHC) - Share Pricing	-97.54
ARMOUR Residential REIT, Inc. (NYSE:ARR) - Share Pricing	-84.19
National American University Holdings, Inc. (OTCPK:NAUH) - Share Pricing	-97.18
LiNiu Technology Group (OTCPK:LINU.F) - Share Pricing	-100
Phoenix Group Holdings plc (LSE:PHNX) - Share Pricing	-14.57
Kennedy-Wilson Holdings, Inc. (NYSE:KW) - Share Pricing	-36.68
Antelope Enterprise Holdings Limited (NasdaqCM:AEHL) - Share Pricing	-98.12
DJSP Enterprises, Inc. (OTCPK:DJSP) - Share Pricing	-100
Average return	15.9348
Median return	-56.9
Companies with positive returns	24.00%

Appendix 6 – Analysis Iridium returns in comparison with comparables

Companies	Share Pricing in %
Iridium Communications Inc. (NasdaqGS:IRDM) - Share Pricing	29.64
Viasat, Inc. (NasdaqGS:VSAT) - Share Pricing	-21.86
Cogent Communications Holdings, Inc. (NasdaqGS:CCOI) - Share Pricing	-30.72
Comtech Telecommunications Corp. (NasdaqGS:CMTL) - Share Pricing	-57.55
Telesat Corporation (TSX:TSAT) - Share Pricing	-78.3
ADTRAN Holdings, Inc. (NasdaqGS:ADTN) - Share Pricing	-4.52
Globalstar, Inc. (NYSEAM:GSAT) - Share Pricing	30.97
EchoStar Corporation (NasdaqGS:SATS) - Share Pricing	-40.17
Motorola Solutions, Inc. (NYSE:MSI) - Share Pricing	0.7
Bandwidth Inc. (NasdaqGS:BAND) - Share Pricing	-75.02
Average	-24.683
Median	-26.29

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