

# Digital Growth Strategies at Drone Racing League

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## Introduction

The Drone Racing League (DRL) was a global drone racing championship for professional pilots that had its inaugural season in 2016. Like other racing sports, such as Formula One, the goal of the DRL was to provide a platform for technology development, whilst creating an entertaining experience for spectators. Nicholas Horbaczewski, founder and CEO of the DRL (see Bio in Appendix 1), commented<sup>1</sup>: *“DRL combines drones, virtual reality and video games – the three most popular technological developments of today – to create a real-life videogame experience that blurs what is virtual and what is real. It’s neither a traditional sport nor an eSport, it is something unique. Our team is dedicated to continuously innovate in order to make DRL the most captivating and immersive sport for fans to watch.”*

After three seasons, the DRL had held races across the globe in venues such as sports stadia, shopping malls, and museums. The DRL had also developed a ‘true-to-life’ drone simulator that allowed anyone to learn how to fly racing drones in simulated environments. The simulator was also a means to recruit drone pilots for the real-world races. In early 2019, the DRL had announced an autonomous drone racing platform, which would start in a simulated environment and be brought to the real world at a later stage.

Furthermore, DRL had raised significant attention among companies from various industries, including BMW, Allianz, Swatch, and Lockheed Martin. These companies were attracted by the potential to engage a difficult to reach audience, namely millennial and younger generations, Horbaczewski explained<sup>2</sup>: *“DRL has the potential to excite and engage a millennial audience, not only because of the roots in technology and the affinity with eSports, but also due to the race format. Offering short, fast-paced races gives people a chance to talk about them and spread the word.”* These companies joined the DRL ecosystem not just as sponsors, but also as co-creators that spurred drone-related innovations. Also, the DRL was backed by investors experienced in the sports entertainment world, such as Liberty Media (which also owned Formula One) and World Wrestling Entertainment (WWE).

## Drone Racing League takes flight

In summer 2015, Horbaczewski was watching drone races in an abandoned parking lot in Long Island, New York. Excited by this spectacle, Horbaczewski wanted to bring this underground activity to a global audience. As a first step, DroneKraft was acquired, a company that

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<sup>1</sup> Source: “Nicholas Horbaczewski : The future of sports is robotics” at TNW 2018  
[https://www.youtube.com/watch?v=Aq8Zh\\_KVkoM](https://www.youtube.com/watch?v=Aq8Zh_KVkoM)

<sup>2</sup> Source: “Nicholas Horbaczewski : The future of sports is robotics” at TNW 2018  
[https://www.youtube.com/watch?v=Aq8Zh\\_KVkoM](https://www.youtube.com/watch?v=Aq8Zh_KVkoM)

developed performance drones, Horbaczewski explained<sup>3:4</sup>: *“We wanted to make sure that everyone's flying exactly the same drone, as this is a test of piloting skills and not who can build the best drone. Moreover, we change the technology on the drones between every single race, and every time we change the tech, it creates possibilities we've never seen before.”* By making the drones available to the pilots (see <https://thedroneracingleague.com/about/>), the DRL did not only create a level playing field but also ensured that pilots were willing to take risks.

With 26 patents after only three years, Horbaczewski highlighted that the innovations originating from the DRL would be essential in the development of drone-related technology for a variety of applications<sup>5</sup>: *“As a robotic sport, technology is in our DNA. I believe competition really drives innovation, it's an incredible proving ground.”* In April 2017, the DRL had earned a Guinness World Records™ title for fastest drone, flying at 163.5 miles per hour. The DRL relied on specialists to deliver adjacent technologies such as first-person view (FPV) goggles and transmitters (see <https://thedroneracingleague.com/technology/>).<sup>6</sup>

The DRL also took care of producing the media content, according to Horbaczewski<sup>7</sup>: *“At our core, we're a technology company. Then we have a media company that produces all of our own media content, and then around that is a sports league.”* The DRL filmed the races, edited the footage and created both long race coverages for broadcasting purposes as well as short clips packed with action for social media posts. Ben Johnson, Head of Marketing and Business Development at the DRL, commented<sup>8</sup>: *“We're not just creating a new sport, we're creating a whole new form of entertainment. Digital media distribution allows us to tell all the compelling stories around drone racing – about the pilots, the races, the technology, and the iconic venues the drones fly through.”*

Horbaczewski was confident that the combination of technology and exciting media productions enabled the DRL to capture the attention of millennial and younger generations<sup>9</sup>: *“When I ask my nine year old nephew who his hero is, he does not name an NFL player, he says Elon Musk. So his focus is much more on technology, entrepreneurship and innovation, than it is on heroics on a sports field. Hence, the DRL has the potential to excite and engage a millennial audience, especially because of the roots in technology and the affinity with eSports.”* Indeed, the DRL tried to captivate the attention of fans at a young age, leading to more familiarity and increasing overall acceptance and fondness of technology in today's society.

Over the years, the DRL had developed different formats of drone racing: physical (real-world) racing, racing in a simulated environment, and racing with autonomous drones.

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<sup>3</sup> Source : <https://uavcoach.com/drl-fastest-drone/>

<sup>4</sup> Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at: <https://schedule.sxsw.com/2019/events/PP102804>)

<sup>5</sup> Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at: <https://schedule.sxsw.com/2019/events/PP102804>)

<sup>6</sup> The FPV goggles were developed by 'FatShark' and the transmitters by FRSky.

<sup>7</sup> Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at: <https://schedule.sxsw.com/2019/events/PP102804>)

<sup>8</sup> Source: <http://thedronegirl.com/2016/08/10/ready-drone-racing-revolution-drls-ben-johnson-weighs/>

<sup>9</sup> Source: “Nicholas Horbaczewski : The future of sports is robotics” at TNW 2018 [https://www.youtube.com/watch?v=Aq8Zh\\_KVkoM](https://www.youtube.com/watch?v=Aq8Zh_KVkoM)

## Physical (real-world) drone racing

The DRL had held races in different iconic and picturesque locations (see Appendix 2 and <https://thedroneracingleague.com/our-races/>). At each venue, three-dimensional, thematic courses were built, each with a specific storyline, Horbaczewski explained<sup>10</sup>: *“We create a real-life videogame experience that blurs what is virtual and what is real. We also like the high contrast, so we’ll put the drones in a dark room because they are covered in ultra-bright LED lights. It just sort of creates this immersive atmosphere that takes this already cool sport to another level for people when they’re watching it”* The races had been described as “Star Wars meets Formula 1,” “Science fiction in reality,” and “a blend of sports, technology, and art.”

Between 12 and 18 pilots participated in each race (see <https://thedroneracingleague.com/pilots/>). The pilots had different backgrounds, Horbaczewski commented<sup>11</sup>: *“Among the pilots are former motorcycle racers and downhill skiers who got injured or didn’t want to get injured and were looking for a new sport.”* Other drone pilots had technical backgrounds such as an (aerial) videographer, software engineer or multimedia director. While the DRL asserted that drone racing was a sport open to all genders, physical abilities and cultures, no women or physically disabled people had raced in the championship yet.

In an attempt to create a celebrity status, the pilots used nicknames. Pilot Paul ‘Nurk’ Nurkkala explained<sup>12</sup>: *“Building characters is part of any sport born in the 21<sup>st</sup> century. All the pro pilots have Instagram accounts that they update regularly; they’re on YouTube and Reddit. When you watch a football or a basketball game, there’s a person you care about, a team you care about. That’s what we’re trying to create in DRL.”*

When attending a live event, spectators could choose between watching the races directly at the venue or watching through First-Person-View (FPV) goggles that were handed out at the event. The FPV goggles allowed fans to see the race through the eyes of the pilot(s) and therefore the perspective of the drones, Horbaczewski commented<sup>13</sup>: *“We call it co-piloting, it’s like this wild ride inside the goggles. It’s awesome to look at the live spectators and see them gripping in their seats.”* Although overall reactions were positive, an often-mentioned drawback of FPV experiences was that it could cause nausea. Furthermore, in a FPV, it was difficult to get a sense of how near or far the competitors were from each other.

In addition, the races were broadcasted via traditional television channels, yet initially not in real-time, Horbaczewski explained<sup>14</sup>: *“By broadcasting races at a later date and time, we can schedule strategically, so we don’t get bumped by bigger sporting events and we can air at times convenient for viewers in different time zones.”* The races were broadcasted in 40 countries in the first season and in 75 countries in the second. Moreover, footage of all the races could be downloaded via iTunes or Amazon’s Prime Video.

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<sup>10</sup>Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at: <https://schedule.sxsw.com/2019/events/PP102804>)

<sup>11</sup> Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at: <https://schedule.sxsw.com/2019/events/PP102804>)

<sup>12</sup> Source :<https://www.theverge.com/2017/6/20/15839700/drone-racing-drl-world-championship-london-sport>

<sup>13</sup> Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at: <https://schedule.sxsw.com/2019/events/PP102804>)

<sup>14</sup> Source:<https://techcrunch.com/2017/06/12/drone-racing-league-raises-a-20m-series-b-ahead-of-its-2nd-season/>

In early 2019, the DRL announced it would stream the races in real-time via their official Twitter account (@DroneRaceLeague). Horbaczewski explained<sup>15</sup>: *“Over the past three years, the number one complaint we’ve gotten from our fans is that our racing isn’t available on a major streaming platform. Over the same time period, Twitter has emerged as the go-to platform for fans to discuss the DRL races, making it a ‘no-brainer’ to broadcast the next season on Twitter.”* In addition, DRL would stream their content via the Chinese Youku<sup>16</sup> video website, part of the Alibaba Group. The DRL also shared snippets of race content on several online and social media platforms including YouTube, Facebook and Twitch<sup>17</sup>. Bite-size race footage was created and released online in the weeks following a race, Horbaczewski explained<sup>18</sup>: *“It’s all very calculated. By spinning many episodes out of one event, we increase the odds of reaching potential converts.”*

### **Simulator drone racing**

The ‘DRL SIM’, launched in 2016 (concurrent with the first season of the real-world races), was an online drone racing simulator that allowed users to experience what it felt like to fly racing drones from the first-person view. The real-world courses and drones were featured in the simulator, which guided users from the basics of drone piloting up to advanced levels. The simulator experience was very close to real-world drone racing, allowing users to practice without spending hundreds of dollars on high-end racing drones, which they were likely to crash anyway.

SIM 3.0 was launched early 2019 and was available for \$19.99 through the Steam platform.<sup>19</sup> In this version, efforts were made to further improve the real-life likeness of the simulator, focusing on real-world physics, orientation and calibration improvements. Users could do individual races or a championship and could also compete online with peers. In addition, users could make changes to the drone (see [https://store.steampowered.com/app/641780/The\\_Drone\\_Racing\\_League\\_Simulator/](https://store.steampowered.com/app/641780/The_Drone_Racing_League_Simulator/)) and create their own racing courses, both of which could be shared with others.

The DRL used the simulator to recruit racing talent. To qualify, users had to fly 16 heats across four different virtual maps. Those with the lowest aggregated time were invited to test their skills in a live simulator tournament, where a winner was crowned and invited to participate in the real-world championship. In 2019, the tryouts were held with 210 contestants at the HyperX Esports Arena in Las Vegas, Nevada with a live audience. The tryouts were also livestreamed on YouTube. The 2019 winner said<sup>20</sup>: *“Last year, I got fourth place. Since then, I have changed my mindset and the way I trained, putting in a minimum of three hours of practice on the DRL Simulator every day, and it really paid off.”* The winners of the tryouts had also proven to be successful in the real-world championship, having won several races.

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<sup>15</sup> Source : <https://www.theverge.com/2019/3/12/18261402/watch-drone-racing-league-live-2019-season-streaming-twitter-nbc-nbcsn>

<sup>16</sup> Youku was a [video hosting service](#) based in [Beijing](#), China.

<sup>19</sup> Twitch was world's leading live streaming platform for gamers. It was founded in 2011 and was a subsidiary of Amazon.

<sup>18</sup> Source: <https://www.wired.com/2016/03/making-drone-racing-the-new-nascar/>

<sup>19</sup> Steam was a popular distribution platform for the gaming community, developed by Valve Corporation.

<sup>20</sup> Source : <https://www.sporttechie.com/gamer-wins-esports-competition-drone-racing-league-contract/>

## AI drone racing

In September 2018, the DRL announced the AlphaPilot challenge, a partnership with Lockheed Martin and NVIDIA. The initiative aimed to accelerate the development and testing of fully autonomous drone technology. Horbaczewski stressed the difficulty level<sup>21</sup>: *“The challenge most people know in autonomy is self-driving cars, yet autonomous drones is more complex in at least two ways. First, a car can be heavy, so you can put in as many technology as you want, as they sit on the ground. We need to shrink technology to something smaller than a pizza box, flying 80 mph. Second, we add a third spatial dimension relative to autonomous cars.”*

In this global challenge, teams of up to 10 people were tasked with developing unique code, which would allow drones to fly fully autonomously without prior knowledge of the course. In their exploration, the teams had access to experts on AI and computer vision, Horbaczewski explained<sup>22</sup>: *“We have a number of different world class university professors, advising this project and helping out. Every team will have a team mentor from Lockheed Martin to help them move their project forward as fast as possible and to access all those resources.”* 430 teams had signed up for the open innovation challenge through the HeroX crowdsourcing platform (see <https://www.herox.com/alphapilot/community>). The teams were composed of people from different communities: aerospace and electrical engineers, programmers, students and gamers. Horbaczewski commented<sup>23</sup>: *“We were overwhelmed by the level of interest with participants from 79 countries. Also, members from most major technical universities in the US are participating, such as MIT, Georgia Tech, Caltech, etc.”*

The teams were put through several rounds of testing from January to April 2019, which was compared to learning to crawl, walk, and run. As an example, one of the tests was to develop a computer vision algorithm capable of detecting the gates to fly through, including identification of the ‘flyable region’. A key trade-off to make for autonomous drone algorithms was between speed and risk: the faster the algorithms allows the drone to go, the more likely crashes become. Nine teams advanced to the next stage, based on an evaluation that incorporated the team’s objective performance, composition diversity, and collaboration practices.

The second stage was called ‘Artificial Intelligence Robotic Racing’ (AIRR) for which the DRL developed the ‘RacerAI’ drone to be used in the physical world. This drone was based on the drone used in the regular championship, but with several adjustments: more sensors and cameras for environment detection and a more powerful graphical processing unit (from NVIDIA) to increase on-board computing. The venues would be similar to the ones in the human, real-world championship, with some simplifications and added visual references such as QR-codes. Horbaczewski explained<sup>24</sup>: *“There will be a series of competitions throughout the year, where the teams will show up and upload their code into a series of standardized high performance autonomous drones. The racing will be completely autonomous, meaning from the moment the drone takes off to the moment it finishes, there can be no human intervention. It’ll be a very cool and unique thing to be at a sporting event with exciting competitive racing,*

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<sup>21</sup> Source : Drone racing in 2019, Drone Radio Show (see: <https://www.youtube.com/watch?v=qrfBXtUXLdl>)

<sup>22</sup> Source : Drone racing in 2019, Drone Radio Show (see: <https://www.youtube.com/watch?v=qrfBXtUXLdl>)

<sup>23</sup> Source : Drone racing in 2019, Drone Radio Show (see: <https://www.youtube.com/watch?v=qrfBXtUXLdl>)

<sup>24</sup> Source : Drone racing in 2019, Drone Radio Show (see: <https://www.youtube.com/watch?v=qrfBXtUXLdl>)

but also a lot of education about AI autonomy, about what it means to the world.” The winning team of AIRR would receive \$1 million in prize money.

Horbaczewski concluded<sup>25</sup>: *“We are in pursuit of creating a ‘Deep Blue moment’ – the IBM chess machine that defeated the world champion – for drone racing.”*

## Partnerships

Over the years, the DRL had partnered with several companies such as Allianz, Swatch, Lockheed Martin, BMW, Fat Shark, the US Air Force, and Cox Communications. Horbaczewski believed the increasing interest was because traditional sports’ viewership was stagnating, whereas that of the DRL was growing rapidly. Yet partners did not join the DRL ecosystem just as sponsors, but also as co-creators, Horbaczewski commented:<sup>26</sup> *“DRL’s fans are extremely sensitive to ‘traditional’ advertising. If I put a billboard up at one of our races, they will throw up on it, they find it offensive to be advertised to.”* Because each event of the DRL championship was built up from scratch, brands could be incorporated more deeply into the different tracks<sup>27</sup>: *“We built the ‘Swatch Gate’, a large watch that drones fly through in a pivotal part of the race. As it is an area that often results in crashes or in pilots losing their lead, the gate has become a place of focus for fans.”*

As another example, as part of the BMW partnership, DRL would get access to their wind tunnel at their headquarters in Munich, Germany to further develop their racing drones. Jörg Reimann, Head of BMW international Brand Experience, said<sup>28</sup>: *“The partnership with DRL will enhance BMW’s racing involvement with future-oriented formats. Drone racing is a very competitive type of racing, characterized by the interplay of extremely high performance material and digital technology.”* In addition, partnerships were leveraged in the simulator environment, Horbaczewski explained<sup>29</sup>: *“We did a really fun thing with Cox last year. We shot a TV commercial of a pilot flying a drone around his mother’s house trying not to knock over any of their antique. Then we recreated that house in the simulator. So fans could watch the commercial and then download that map in the simulator and actually try flying through the house themselves.”*

Comments from the partners confirmed their interest and way of working was different. Carlo Giordanetti, Creative Director of Swatch, commented<sup>30</sup>: *“The drone-racing audience is one that Swatch cannot reach elsewhere and stands out from other sports fans, because of how they embrace new technology and sports. Throughout the championship, Swatch plans to use the racers as influencers, sharing their stories. Swatch will likely also bring some racers into its stores, as it already does with around a dozen other athletes.”* Pailhol of Allianz confirmed<sup>31</sup>: *“When it comes to the new digital sports ecosystem, drone racing was a very natural first move for us. It’s an emerging sport that takes place in the physical world and is influenced by digital*

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<sup>25</sup> Source : Drone racing in 2019, Drone Radio Show (see: <https://www.youtube.com/watch?v=qrfBXtUXLdI>)

<sup>26</sup> Source : <https://www.adweek.com/digital/how-drone-racing-league-is-integrating-brands-into-its-races/>

<sup>27</sup> Source : <https://www.adweek.com/digital/how-drone-racing-league-is-integrating-brands-into-its-races/>

<sup>28</sup> Source: <https://markets.businessinsider.com/news/stocks/bmw-brings-the-drone-racing-league-to-bmw-welt-in-munich-1002161888>

<sup>29</sup> Source : <https://www.adweek.com/digital/how-drone-racing-league-is-integrating-brands-into-its-races/>

<sup>30</sup> Source : <https://digiday.com/marketing/swatch-taps-esports-sponsoring-drone-racers/>

<sup>31</sup> Source : <https://www.alistdaily.com/strategy/inside-the-allianz-and-drone-racing-league-partnership/>

*at the same time. Awareness levels are growing rapidly around the world. What really won us over was DRL's openness to Allianz being a true partner and not just a sponsor."*

### **What is next for the DRL?**

The DRL had leveraged a multi-faceted strategy of combining technological innovation with new fan experiences created through strategic partnerships. Horbaczewski considered the DRL to be one of the first sports of a new category "**rSport**," referring to **robotic** sport, which he described as<sup>32</sup>: *"A sport where the competitors are robots engaging in a physical space, but a form of human competition remains. There is always a human in the loop, either controlling the actual drone or writing the software that flies it."* The DRL had innovated at a fast pace, Horbaczewski commented<sup>33</sup>: *"We continue to update our technology. Every season we bring new technology and exciting innovations to the sport. Most sports leagues complain that they can't innovate, we get pushed by our fans to innovate."*

### **Questions**

1. Discuss the key drivers of DRL's (digital) strategy in terms of digital technology trends, changing customer behavior, and the competitive landscape. Also, how can DRL's performance be evaluated?
2. What makes the DRL a digital sports business? Discuss its key resources and business model.
3. How would you characterize DRL's different drone racing formats in terms of physical and virtual elements? What is the spectator experience like for each format?
4. What digital growth strategies has the DRL applied and how can it grow further?

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<sup>32</sup> Source: "Nicholas Horbaczewski : The future of sports is robotics" at TNW 2018

[https://www.youtube.com/watch?v=Aq8Zh\\_KVkoM](https://www.youtube.com/watch?v=Aq8Zh_KVkoM)

<sup>33</sup> Source: Off to the Drone Races: The Future of Unmanned Flight, SXSW 2019 (recording available at:

<https://schedule.sxsw.com/2019/events/PP102804>)

## Appendix 1. Bio Nicholas Horbaczewski\*

Nicholas Horbaczewski is the founder and CEO of the Drone Racing League, which is located in the city of New York. Prior to this, he was Chief Revenue Officer at Tough Mudder, the largest mass participation running event series in the world. Before Tough Mudder, he developed an interest in multicopters when he was CIO of ADS, a distributor of advanced hardware to the US government. He also co-founded Leeden Media, a company that creates feature-length independent films. He began his career as a consultant at Bain & Company after earning a BA and an MBA from Harvard University. Horbaczewski has been recognized for building the sport of the future and has been named one of the Entrepreneurs Magazine's 50 most innovative entrepreneurs, selected to Crain's 40 Under 40 list, credited by Fast Company for founding one of the most innovative companies in the world and awarded by Ad Age for creating the 2017 Start-up to Watch.

\*Sources: <https://schedule.sxsw.com/2019/speakers/4973> and <https://giflondon.com/profile/nicholas-horbaczewski/>

## Appendix 2. Race locations across the different seasons

Level	2016		2017		2018	
	City	Type of venue	City	Type of venue	City	Type of venue
1	Miami, Florida	NFL Stadium	Miami, Florida	NFL Stadium	Tehachapi, California	Pro skateboard and BMX camp
2	Los Angeles, California	Shopping mall	Atlanta, Georgia	Disaster training center	Oracle, Arizona	Ecological observatory
3	New York, New York	Laboratory	New Orleans, Louisiana	Warehouse	Las Vegas, Nevada	Indoor amusement park
4	Hamilton, Ohio	Paper mill	Boston, Massachusetts	Paper Mill	Nice, France	Football stadium
5	Detroit, Michigan	Auto plant	Nice, France	Football Stadium	Munich, Germany	BMW Brand/product
6			Munich, Germany	BMW Brand/product	Jeddah, Saudi-Arabia	Kings Economic City
7			London, UK	Alexandra Palace		
8						