# Table of Contents

- GP Bullhound Technology Predictions 2016 ............................................................................................... 5
- Recap of GP Bullhound’s 2015 Predictions ................................................................................................. 6
- Virtual Reality Becomes Reality ................................................................................................................... 8
- “Quantified Self” Transitions from Niche to Mainstream ......................................................................... 10
- Automotive Industry Ripe for Innovation .................................................................................................. 12
- Alternative Lending Continues to Shine Brightly in Financial Technology Sector ............................... 14
- Gaming Giants Fortify Positions in Top Grossing Charts, Gobbling Up Challengers ......................... 16
- Digital Video Becomes More Measured to Keep Growing Up .............................................................. 18
- “Deskless” Workers Come to Forefront in Enterprise Mobility Shift ......................................................... 20
- Cybersecurity Continues Soul Searching ................................................................................................. 22
- Drones Will Fly Into Headwinds of Uncertainty ......................................................................................... 24
- Unicorn Hunting Now in Season ................................................................................................................. 26
- Disclaimer ..................................................................................................................................................... 28
- Our Team ...................................................................................................................................................... 30
For the ninth year running, GP Bullhound is publishing its Technology Predictions for the upcoming year.

2015 was a banner year for M&A activity and we witnessed the largest pure technology acquisition in history when Dell announced its intention to acquire EMC for $67 billion. Approximately $126 billion was invested into venture-backed companies globally, with large late stage rounds pushing valuations of privately-held technology companies to stratospheric levels.

Our predictions for 2016 start with virtual reality as the first headsets launch this year. We anticipate the gaming and media sectors to gain the quickest traction in the near term, but virtual reality still needs to develop a “must have” factor to become truly mass market.

We expect digital fitness and wearables to be further woven into the mainstream as they start blending into our everyday fashion, and mega sports apparel companies such as Nike, Under Armour, and Adidas will use their powerful marketing clout to push this trend.

While we’ll have to wait a little longer for self-driving cars, the automotive industry will become increasingly connected as new technology implemented inside the car will become a major influence in consumer purchasing decisions.

Alternative lending will remain hot as word-of-mouth spreads about the streamlined lending experience provided by emerging peer-to-peer lending platforms. The big banks will strike back as they see their long-held dominance in lending under attack.

We foresee further consolidation in gaming as the kings of the top mobile grossing charts add leading independent gaming companies to their respective kingdoms to fortify their positions.

Digital video will have to become more measurable to evolve into a formidable advertising medium. We expect the tech/media players to keep bolstering their video platforms to prove ROI to advertisers.

The enterprise is shifting towards mobile, and we believe one of the largest opportunities will be the creation of mobile apps to help “deskless” workers become more productive and better connected.

In 2015, cybersecurity breaches continued at an alarming pace. Security will be a top-of-mind issue for executives, or else they risk losing their positions should their companies become victims of future attacks.

Drones are becoming increasingly popular, but uncertainty around their regulation and current technical limitations will prevent them from breaking out at mass scale this year.

Lastly, tech unicorns will come under increased scrutiny in 2016 and we expect a number of them to lose their unicorn status as their valuations fall below the $1 billion threshold.
Recap of GP Bullhound’s 2015 Predictions

Before we dig into this year’s exciting list, here’s a brief recap of last year’s predictions and how we saw their development throughout the year.

As we expected, End-to-End Service Disruption penetrated beyond lodging and transportation in 2015. We witnessed significant growth and funding in the following industries – Professional Services (Thumbtack), Staffing (Managed By Q, Shiftgig), Delivery (Postmates, Dada, Munchery), Healthcare (PillPack, ZocDoc, Pager), Beauty (StyleSeat), Auctions (Auctionata), Retail (Farfetch, thredUP), and Parking (SpotHero, Zirx). Additionally, Etsy went public while Homeaway was acquired by Expedia.

We began to see the impact of Internet of Things (IoT), especially with consumer electronics as they showed vast improvement in their software and intelligence with the 2015 product launches of Apple Watch, Intel Curie, and Fitbit Surge. We saw successful exits with Endomondo and Misfit, and new IoT platforms continued to emerge last year. Large tech companies made moves in the analytics of IoT as evidenced by Cisco’s acquisition of ParStream and IBM announcing it would dedicate $3 billion to help clients better integrate real-time data and insights from dispersed sources1.

Changes in the World of Payments continued in 2015 as the digital movement changed consumer’s preferences towards traditional payments, as preference for credit cards dropped 5%2. Mobile payments saw tremendous tailwinds as merchants began to replace old point-of-sale terminals with new mobile-supported terminals. Following the heels of their Asian counterparts, U.S. messaging apps also launched payment capabilities. Bitcoin exchange trading volumes hit an all-time high last November, and major companies started to explore and implement distributed ledger technology, inspired by the blockchain.

The movement of 3D Printing from Prototyping to End-Products made progress in 2015 – albeit slower than we expected. We saw large manufacturers such as General Electric invest heavily into 3D printing. Its aviation division opened a plant to print fuel nozzles for its LEAP aircraft engine with the expectation of manufacturing upwards of 100,000 parts annually by 20203. Cloud services around 3D printing are beginning to scale as Trimble 3D Warehouse and Sketchup hosted 2.7 million 3D printable models in 20154. Innovation continued in this industry with a record amount of funding in 2015 at approximately $320 million, the most notable being Carbon3D, who raised $100 million5.

The emergence of New Media Outlets kept going in 2015. Millennials continued to redefine how media is consumed and more incumbents took notice. Vice Media was reported to be on track to hit nearly $1 billion in 2015.

---

1 IBM Press Release, May 2015
2 Accenture Digital Payments Survey, Oct 2015
3 Fortune, Mar 2015
4 Wohlers Associates, Jun 2015
5 Tracxn Research, Dec 2015
revenue and traditional media outlets sought to stay relevant by investing and acquiring these new media brands to capture growth. Vox Media raised a massive $250 million investment from NBCUniversal while Time Inc. and Condé Nast acquired HelloGiggles and Pitchfork respectively.

We predicted a Continued Emergence of One-Stop Shops in Ad-Tech and witnessed leading publishers and online advertising players acquire dozens of pure-play ad-tech companies in 2015 to diversify their revenue streams and offer comprehensive solutions. The most notable ad-tech transactions of the year were News Corp acquiring Unruly, Twitter acquiring TellApart, AOL acquiring Millennial Media, and Rubicon Project acquiring Chango. Additionally, WPP acquired global digital agency Essence.

A Returned Focus on Customer Long-Term Value in Mobile Gaming ultimately came to fruition as nearly 60% of the top 25 grossing games from 2014 remained at the top of the charts in 2015 by maintaining strong KPIs. Asian publishers made concerted efforts to enter the mobile space with Nintendo announcing a partnership with DeNA, and Tencent and Netmarble made large investments into western gaming companies. Activision Blizzard acquired King Digital.

Enterprise SaaS Adoption reached a critical tipping point at the end of 2015 as the CRM revenue split between cloud and on-premise converged closer to 50/50, and cloud will soon overtake the majority of CRM revenues this year. It was estimated that 77% of businesses used some type of cloud-based software tool in 2015, a 9% increase from the previous year. While growth and adoption in SaaS is expected to continue, security and compliance regulations still remained a significant hurdle in 2015.

A Comprehensive Cybersecurity Solution became increasingly important as major security breaches continued in 2015. Cisco announced its “Security Everywhere” initiative to strengthen protection in the cloud, network, and endpoints and acquired OpenDNS, which uses predictive intelligence to prevent security threats. Multi-factor authentication was also big in 2015 as we saw several acquisitions that included Authy, Toopher and Authentify.

Our prediction that Technology & Product Exits Will be Strong in 2015 came true. Total tech M&A deal value worldwide was a whopping $624 billion. As expected, large buyers were not shy to pay top dollar for strategic tech targets and there was appetite to find ways to grow inorganically as innovation continued to drive faster paradigm shifts. We also witnessed a strong increase in cross-border M&A transactions.

---

* Wall Street Journal, Nov 2015
7 AppAnnie, Dec 2015
8 Bessemer Venture Partners, Jun 2015
9 North Bridge Cloud Survey, Dec 2015
10 Cisco Press Release, Nov 2015
11 Dealogic, Dec 2015
Virtual Reality Becomes Reality

2016 is the year that virtual reality fans have been waiting for. The question remains whether virtual reality will get significant traction in the average consumer’s home as a “must have” item. We think not, but the long awaited public release of this new emerging technology platform is in itself a change of perception in the market from “cool” to “game changer.”

Facebook’s Oculus is releasing its Rift headset to consumers this quarter, and Sony’s Playstation VR and HTC’s Vive/Steam VR will be available in the first half of this year. This represents a major shift from concept and design to being widely available to the general public for purchase. The expectation surrounding the technology stems from the huge potential for disruption to a diverse array of traditional industries, as well as the large sums being talked about when discussing fundraising and acquisition activity in the virtual reality and augmented reality space. Magic Leap is leading the way in augmented reality, as it announced its intention to raise a massive $800 million+ round of funding this past December, even without a readily-available product.

The hardware is dominated by many Silicon Valley and Asian tech giants. The most anticipated headsets are coming from the likes of Samsung, Sony, Google and Oculus. This consolidation of power from the hardware side has led to a massive opportunity on the software and content side. Media companies and venture capital firms are beginning to pump capital into companies like Jaunt, which raised $67 million last September, and AltspaceVR, that had its own $10.3 million investment this past July, who are tasked with ensuring the potential of the hardware is fulfilled through engaging uses and high quality applications.

Virtual reality can revolutionize a wide variety of industries such as media, sports, gaming, entertainment and education, and in 2016, we will see an early preview of high impact use cases and applications. In the near term, the gaming and media industries will likely get the lion’s share of the $150 billion of expected revenue coming from virtual reality by 2020. Legacy studios, such as CCP Games, are converting

---

1 Digi Capital, Jul 2015
already hugely popular games to virtual reality platforms. Virtual reality-only game studios such as Playful and Resolution Games are working on new and extremely exciting innovations in gaming that they hope will extend beyond the hardcore gamer and reach the living room of the average consumer. On the media side, expect to see the first “made for virtual reality” movies and shows in 2016.

We expect 2016 to be a big year for virtual reality, as in our opinion it will be a year where the revolutionary nature of this technology and wide variety of applications that stem from it will be well understood by the masses. We will experience a year full of virtual reality headlines, massive investments, and product launches, yet it will be a year where virtual reality becomes a reality primarily for the early adopter.

Our belief is that widespread adoption will take place once the virtual reality experience becomes more seamless, headsets are aesthetically streamlined, more quality content is available, and the price of the technology naturally decreases.
“Quantified Self” Transitions from Niche to Mainstream

Digital fitness and wearables are both manifestations of the “Quantified Self” movement, first conceived in 2009 by Wired Magazine writers Kevin Kelly and Gary Wolf evangelizing self-knowledge through self-tracking\(^1\). With the rise of mobile devices, big data, and social media, waves of innovation have since followed in the form of hardware and software startups creating various products and services tracking activities such as exercise, diet, sleep patterns, and vital signs.

The Quantified Self movement was once thought to only serve a niche demographic of fitness elites and health fanatics. However, the general ethos and benefits of tracking one’s well-being is beginning to resonate with a mass consumer audience. As evidenced from Nielsen’s Global Health and Wellness Report, people today are becoming more conscious of their health than previous generations, making concerted efforts to shift lifestyle habits to incorporate more exercise and embrace healthier eating options\(^2\). Research firm IDC estimated that worldwide shipments of wearable devices reached 76 million in 2015, up 164% from 29 million units in 2014, and will reach as high as 173 million units by 2019 (23% 5-yr. CAGR)\(^3\). We also saw Fitbit, one of the original wearable startups, complete its IPO this past June ending with a $4.1 billion valuation on its first trading day\(^4\). Jawbone, a manufacturer of wireless peripherals such as headphones and speakers, pivoted towards selling fitness-focused products. Tech conglomerates Apple and Samsung have also made concerted efforts with various features, such as heart rate monitors and fitness trackers, incorporated into their respective product offerings.

Although there have been periodic acquisitions in this space since 2009, the first serious wave of consolidation occurred in 2015. Under Armour, the rapidly-rising sports apparel company, has been the most aggressive when it acquired both MyFitnessPal and Endomondo for $47.5 million and $85 million respectively. These acquisitions followed Under Armour’s first acquisition of MapMyFitness ($150 million) back in 2014 to form its Connected Fitness platform. Adidas, which slipped to No. 3 behind Nike and Under Armour in the U.S. market at the end of 2014,

---

\(^1\) Wired, Jun 2009  
\(^2\) Nielsen Global Health & Wellness Survey, Jan 2015  
\(^3\) IDC Worldwide Quarterly Wearable Device Tracker, Sep 2015  
\(^4\) Wall Street Journal, Jun 2015
kept pace with its acquisition of Runtastic for $246 million. Nike has chosen to pursue its digital strategy in-house with mixed results, producing its popular Nike+ mobile apps but also producing the failed FuelBand which ended in a class-action settlement in which the company embarrassingly admitted that its wristband did not accurately track calories and activity. As these sports apparel giants continue to experiment with their respective digital products and services, their massive marketing clout and reach will help build increasing acceptance towards digital fitness and wearables to get mass market consumers to be more active (and, in turn, buy more apparel and shoes from them).

We will also begin seeing other traditional fashion brands join in. Ralph Lauren began selling its sensor-laden PoloTech workout shirt for $295 this past August. Integrating wearable technology into every day and well-known fashion brands with tasteful and proven aesthetics will be a key catalyst for the wearables industry. A good example of this trend is when general fashion and watch manufacturer Fossil Group acquired wearable activity tracker startup Misfit for $260 million late last year. We believe we will see similar transactions in the near future as well as increasing collaboration between technology companies and traditional fashion brands, all of which collectively will help continue to usher digital fitness and wearables deeper into the mainstream.
Automotive Industry Ripe for Innovation

Until recently, the automotive industry seemed to move at its own pace, with consumers primarily concerned about torque, pulling power, and acceleration. In 2016, the auto business model will continue to see changes with car operating systems and connectivity increasingly becoming a major driver of new car sales. New innovative operating systems geared towards the car will spur growth, and we expect the software to be dominated by third party software and technology players, most notably Apple with CarPlay and Google with Android Auto, and not the car manufacturers themselves.

The self-driving and autonomous vehicle grabs most headlines when it comes to the public’s attention and imagination. Although driverless technology is undoubtedly game changing, we believe it is still nascent and will not be commercially ready for several years.

We are however, seeing in-car technology improve by leaps and bounds, with embedded infotainment middleware solutions from the likes of Cinemo allowing virtually any operating system (OS), including Apple CarPlay and Android Auto, to run seamlessly on its platform. This enables drivers to run these operating systems without lock-in and effortlessly sync many of the apps on their phone with their cars, improving safety and functionality. Apple’s CarPlay has the same user interface as the iPhone that we all know and love, and Android Auto lets you use up to 21 apps to enhance the driving experience.

Auto companies are trying and failing to resist this tech intrusion into their products, but those who do embrace it are reaping the rewards. General Motors’ integration of CarPlay into 27 of its car models is being touted as a major reason for a recent jump in sales1. Ford is also looking to benefit from better in-car technology, announcing this month that both Apple CarPlay and Android Auto will be integrated into all of its models from 2017 onwards2. Increasingly, auto manufacturers will heed to the ease of integration between device OS and car OS that consumers demand.

However, the software landscape involves more than just Google, Apple and the auto manufacturers. There are a multitude of software providers and innovators looking to disrupt the traditional auto industry. We have identified several companies that are positioned to become leaders in the connected automotive space.

---

1 Wall Street Journal, Dec 2015
2 The Next Web, Jan 2016
and hardware companies that together make up the connected car landscape. For example, Rightware provides advanced user interface solutions for car infotainment systems, and Tier-1 players such as Bosch, Harman, and Visteon provide end-to-end systems that are responsible for transforming and reimagining the driving experience. We expect consolidation to take place among the smaller software players as large tech companies look to build out their respective connected car offerings.

Although there are still concerns about privacy and safety with the connected car, especially the potential for hackers to break into the system, we believe these obstacles will be overcome on the automobile industry’s journey to becoming more plugged into the technology ecosystem.
Alternative Lending Continues to Shine Brightly in Financial Technology Sector

While much of the innovation within the fintech sector in recent years has occurred in mobile payments and cryptocurrencies, alternative lending – in particular, peer-to-peer (P2P) lending platforms – has also emerged as one of the leading innovations. One can point to the breathtaking amount of fundraising that flooded into alternative lending’s hottest names in the last half of 2015, led by SoFi’s massive $1 billion investment from Softbank (the largest single financing round in the history of fintech), Avant’s $325 million investment from General Atlantic, Auxmoney’s $163 million investment from Aegon, and Prodigy Finance’s $124 million raise from Balderton, Credit Suisse and Deutsche Bank, to name a few. We expect investors to continue to pour money into alternative lending players in 2016.

Unlike their traditional lending counterparts that are often burdened with stifling regulation, antiquated processes, and high overhead costs, alternative lending providers have no need for reserve requirements and are leveraging technology to enjoy a refreshing nimbleness. They have the ability to process loans more quickly and conveniently, create proprietary analytics and credit scoring models to enhance their own credit underwriting ability, and maintain low operating costs. With prolonged and historically low benchmark interest rates, alternative lending provides an attractive new asset class to potential lenders (in the form of investors) starving for higher yielding returns. The value proposition is quite clear for both sides – borrowers are able to find loans that they otherwise could not get quickly and efficiently while lenders can selectively make loans at levels of risk they prefer, attaining attractive returns.

With the promise of alternative lending dramatically improving the entire lending experience, we have seen the platforms permeate into a wide range of verticals such as student loans, auto loans, mortgage loans, and business and personal loans, all of which collectively form a multi-trillion dollar opportunity. We anticipate the popularity of these platforms to increase through word-of-mouth from satisfied users and the volume of loans processed to continue to grow rapidly in a space that has long been ripe for innovation.

Traditional banks are getting increasingly nervous about the success of alternative lending platforms that are threatening to cut them out of their long-held dominance in the lending business. Jamie Dimon, CEO of JPMorgan Chase, famously warned shareholders in his annual letter in 2014 that startups are coming for Wall Street, innovating and creating efficiency in many of its core businesses. We anticipate the big banks to strike back by partnering with these emerging lending platforms, participating in future financing rounds or acquiring smaller innovators to keep a close eye on this new competitive threat. To its credit, JPMorgan has been one of the most proactive, teaming up with publicly-traded OnDeck, a major P2P lender, to provide loans to small businesses.

---

1 GP Bullhound Estimate
2 Bloomberg, Dec 2015
Our bullishness towards alternative lending is not without caution. Issues still remain with potential new regulatory burdens, especially with regards to usury laws. It will be interesting to see how alternative lending performs in a down economy where default rates and risk assessment will truly be tested. Should an economic downturn occur, we anticipate a flight towards secured (collateralized), leading lenders such as LendInvest, who will get first choice of prime borrowers while lesser known platforms will be forced to deal with lower quality borrowers. In addition, operational trustworthiness will be a concern. TrustBuddy, an early P2P lending platform, shut down its operations this past October after suspicion of misappropriating funds. These dynamics may lead to a market characterized by a few large “winners” taking the lion’s share of revenues.
Gaming Giants Fortify Positions in Top Grossing Charts, Gobbling Up Challengers

Gaming has always been one of the most lucrative forms of digital content. One only needs to look at the top mobile grossing charts in the world’s five largest economies for proof. In the United States, 8 of the top 10 grossing mobile apps are from gaming companies, while in China, gaming companies own 100% of the country’s top 10 list. Japan, Germany, and the United Kingdom all have at least eight gaming apps in their respective top 10 rankings1.

Activision Blizzard woke up to a mobile epiphany in a big way in 2015 with the bold acquisition of King Digital for $5.9 billion, and it serves as a good microcosm of the inevitability towards a mobile-first paradigm that the gaming industry is now fully embracing. Nintendo, like many other hesitant traditional console gaming companies, finally relented last year as it entered a partnership with DeNA to create new mobile games set to be released this year. It was no coincidence that Nintendo’s stock jumped 36% shortly after the mobile partnership was announced2.

We have been paying particular attention to the top grossing mobile charts over the past several years and could not help but notice a hegemony being created among the top gaming giants. For three years in a row, the vast majority of top grossing games were owned by only a select few players – Supercell (Softbank), King Digital (Activision Blizzard), MachineZone, Kabam, Playtika (Caesars Interactive), Electronic Arts, Big Fish Games (Churchill Downs), and Glu Mobile. In 2015, these eight players collectively owned 12 of the top 15 (80%) grossing titles in the United States in the Apple iOS App Store3.

Ownership of Top 15 U.S. Mobile Game Titles

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>King Digital</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Machine Zone</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kabam</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Playtika</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Glu Mobile</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>

1 AppAnnie Rankings, Jan 2016
2 CapitalIQ, May 2015
3 GP Bullhound Research
It is clear that the rich are getting richer as the key consolidators currently own more than 93% of the top 30 grossing titles and nearly 70% of the top 100 titles. Any independent gaming company that successfully swam upstream and entrenched itself in the top grossing rankings became a target for acquisition, especially if they possessed solid key performance indicators in user retention and title longevity. With the luxury of huge war chests from the cash flow generated from their respective games, the larger players acquiring independent players enables them to quickly gain proven titles to add to their portfolio and fortify their positions at the top of the charts. We believe this trend will only continue in 2016, as many remaining independent players are taken out via acquisition or receive sizable investments from the larger players that end up becoming controlling stakes over time.

**Landscape of Select Top Gaming Players**

*GP Bullhound – Technology Predictions 2016*

Source: AppAnnie Rankings, GP Bullhound Research

* GP Bullhound Research
Digital Video Becomes More Measured to Keep Growing Up

Digital video is undeniably a massive media format, accounting for 64% of all consumer internet traffic worldwide. Over-the-top platforms such as Hulu, Netflix, and Amazon are all thriving with growing subscriber bases and succeeding in creating their own original content. Viewers themselves are also generating their own video content, some of whom are becoming pseudo-celebrities on monolithic platforms such as YouTube and on emerging ones such as Vessel and Meerkat. Social media is also trying to capitalize on the momentum as Facebook, Twitter, and Snapchat are becoming increasingly focused on their respective video offerings. In 2015, U.S. adults for the first time were spending more time with digital video (115 minutes) than social media (104 minutes) on a daily basis.

As video has become increasingly important in the digital media world, acquisition and investment activity for digital video assets have been consistently robust in the last decade. The first major consolidation movement was to grab the anchor video platforms such as YouTube (Google), Twitch (Amazon), Maker Studios (Disney), Ooyala (Telstra), and Dailymotion (Vivendi). In the last few years, consolidation occurred among the top video ad tech platforms – mDialog (Google), LiveRail (Facebook), BrightRoll (Yahoo), Unruly (News Corp), Adap.tv (AOL), and MoPub (Twitter). A "space race" is happening among technology media-focused players, each vying to make its video platform the premiere destination for not only content creators but also brands and marketers. We anticipate further M&A activity from these players focused on acquiring assets and teams to help bolster their video platforms. Of the most pressing strategic needs, we believe a priority will be placed on video analytics and measurement tools.

Even with the rapid shift of eyeballs towards digital video and away from traditional media, some would be surprised to find digital video ad spend has yet to shift proportionately to match usage patterns. U.S. digital video ad spend is forecast to be $9.6 billion in 2016, a sizable figure but still a relatively minor percentage of total U.S. digital ad spend ($67.1 billion) and significantly smaller than the traditional TV ad market.

To open the floodgates for digital video ad spend, we believe a more robust measurement layer driven by analytics needs to be firmly established to better understand the advertising and engagement efficacy of video. A study by ad agency Millward Brown showed that...

---

1 Cisco Visual Networking Index, May 2015
2 eMarketer, Apr 2015
3 eMarketer, Mar 2015
more than 70% of marketing executives would spend more on digital platforms if there were better ways to measure the ROI on them. Cursory metrics such as total video views will no longer be sufficient as brands and marketers seek to track their audiences and campaigns in much more sophisticated manner. Companies such as Visible Measures and Strike Social, who are trying to create better tools to measure video audiences and campaigns, will help digital video in its ongoing evolution to becoming a more mature advertising medium.

2016 will be interesting to see how all the major tech/media-focused platforms - Google, Facebook, Yahoo, News Corp, Verizon-AOL, and Twitter - will approach video audience and campaign measurement as they compete for the same advertising dollars. We believe their next battle is who solves the digital video ad measurement riddle first, with the winner significantly increasing its value proposition with brands and marketers to rise above its peers as the premiere advertising platform in a video-centric world.

* Millward Brown Digital Study, Jul 2015*
"Deskless" Workers Come to Forefront in Enterprise Mobility Shift

The enterprise has experienced some seismic technology paradigm shifts in recent years. Cloud computing gave rise to software-as-a-service (SaaS) products and services that have become increasingly embraced and adopted, while the bring-your-own-device (BYOD) concept and “consumerization” phenomenon have forced enterprises to reimagine collaboration and productivity among their respective workforces. Today’s workers – many of whom are now tech-savvy Millennials – demand access to critical business information within a moment’s notice, whether they are in the office or not.

The next paradigm shift currently taking place is making the enterprise more mobile. Research firm Gartner suggested that market demand for enterprise mobile app services will grow at least five times faster than the supply of available mobile solutions from internal IT departments by the end of 2017. This strong demand is creating a new generation of high-growth companies focused on enabling enterprise mobility.

One of the darlings to emerge within the growing enterprise mobile app ecosystem is Slack, which has successfully created a viral and sticky solution reinventing rigid enterprise e-mail and messaging tools. Slack has enabled more cohesive communication and increased productivity within the work environment, and its rising popularity and rapid growth allowed the company to complete a $160 million investment last April at a cool $2.8 billion post-money valuation. The common denominator among successful enterprise mobile app companies is an obsessive focus on creating simple and intuitive user experiences that closely resemble those found in consumer apps. The list of enterprise mobile app companies and venture funding into them continues to grow, and most are taking an industry-specific, vertical approach rather than a cross-industry, horizontal approach taken by the previous generation of SaaS pioneers.

As the evolution towards mobile continues, one of the more promising opportunities within the enterprise is in “deskless” industries, primarily those in healthcare, construction, retail, transportation, and field services. Google estimated that 80% of the global workforce (approximately 3 billion) is performing physical or deskless work daily. This group includes those working on their feet in settings such as

---

2 Gartner, May 2015
3 TechCrunch, Apr 2015
a hospital, farm, or warehouse. These workers typically do not have a computer issued by their employer and are left to work with antiquated technology solutions and processes. However, many of these workers are now carrying mobile phones and an opportunity exists to create enterprise-grade mobile apps that cater to their day-to-day functional needs in their respective industries to maximize flexibility and productivity. Emerging companies such as PlanGrid are coming up with mobile solutions for construction professionals to better manage their ever-changing blueprints and drawings, while ServiceMax is automating tasks and processes for service technicians and field workers.

We expect more enterprise mobile app companies to emerge. Those leveraging top-notch mobile development prowess with deep domain expertise in the specific industries they seek to serve will become the leaders that help extend the enterprise’s digital reach beyond its corporate front and back offices.
Cybersecurity Continues Soul Searching

We're taking our prediction one step further from last year by saying 2016 is the year that advanced cybersecurity solutions for the enterprise become ubiquitous and a “must have” of business operations.

Public and embarrassing hacks have been occurring for years, yet the frequency with which large scale cyber attacks have been happening over the past year have dramatically increased. Ashley Madison, the online dating site for married people, was the victim of so-called “Hacktivism,” and more recently Starwood Hotels had 54 of its property’s payments systems compromised. Insurance broker Lloyd’s estimated that cybercrime will cost businesses $400 billion annually, and JPMorgan, itself a victim of a high profile cyber attack in 2014, is said to have set aside $500 million in 2016 to combat cybercrime.

So the pressing question is how do you solve an unsolvable problem? To simply illustrate the conundrum, we can look at a timeline of cybersecurity thought. Initially, a team of experts would be brought in to investigate an identified breach (normally a long time after the perpetrators had made off with all the data they wanted). Then there was a move towards automation in responding to identified cyber attacks. Now we have shifted to a blend of the two approaches. Our expectation is that the standout performer in the cybersecurity space will be the one who is able to formulate an approach that not only has the technology necessary to combat cyber threats, but also the right proactive, reactive, and human elements to its solutions.

Companies to Watch

The pressure for an effective defense mechanism against cybersecurity threats is not just coming from the consumer. The boardroom and C-suite are placing an enormous amount of importance on the issue, not only to safely protect company information, but also to preserve their own jobs, and in some extreme cases, careers.

1 Fortune, Jan 2015; Forbes, Dec 2015
The need for an effective solution is so great that according to CB Insights, in the past two years alone, investors have plunged $4.6 billion into cybersecurity companies, increasingly leading to a sense that the cybersecurity funding market may be overheating\(^2\). Our expectation is that smaller companies operating in this hyper competitive industry will face significant challenges in 2016. However, those companies that have the requisite technology to compete will likely be targets for the larger private companies, such as Tanium or Crowdstrike, or the legacy security players in a bid to stay relevant and agile, contributing to an active M&A market.

\(^2\) CB Insights, Nov 2015
Drones Will Fly Into Headwinds of Uncertainty

One of the biggest stories at the 2016 Consumer Electronics Show in Las Vegas was undoubtedly drones, with nearly 30 companies taking up over 25,000 square feet of exhibitor space to showcase them\(^1\). Officially known as Unmanned Aircraft Systems or Vehicles (UAS/UAVs), drones have captured the fascination of both enterprises and consumers. DJI, the world’s largest drone manufacturer based in China, raised a $75 million round from Accel Partners last year at a reported $8 billion valuation\(^2\). Venture capital firm Kleiner Perkins estimated that 4.3 million consumer drones were shipped in 2015, an increase of 167% from the previous year\(^3\).

Much of the focus around the use of drones has been in autonomous delivery of goods and taking magnificent camera shots from seemingly impossible angles and perspectives. Action camera maker GoPro is attempting to take advantage of the latter use case by launching its first drone (Karma) later this year. Yet other potential use cases in vertical markets such as telecom, film production, agriculture, and energy are still nascent and make research pundits salivate at how big the total drone market truly could be. Google and Facebook have been testing sophisticated solar-powered drones from their respective acquisitions of Titan Aerospace and Ascenta back in 2014 to help accelerate their ambitious internet connectivity projects. Although the promise and hype around drones continue to reach new heights, we anticipate drones will face significant headwinds in 2016.

A major obstacle yet to be resolved is the laws and regulations governing the use of drones. While regulations around drones are more lax in countries such as Canada and Australia, regulations in the United States, with the strictest airspace laws and largest customer base of consumer drones, are yet to be fully defined. The Federal Aviation Administration (FAA), which governs U.S. national airspace, “promised” to have its first set of laws and regulations in place later this year. Amazon is eagerly awaiting the FAA’s decision as the company has been the most aggressive among the large retailers in its pursuit to utilize drones as autonomous delivery mechanisms. While the FAA continues to ponder how to regulate commercial drone use, its mandate that all consumers (or hobbyists) register their drones will become an unwelcomed nuisance. We fear unintended consequences such as the increase of “rogue” drone users who may add to the increasing number of accidents, or near-accidents, that end up in the news for the wrong reasons. Secondly, the environmental impact of thousands, if not

\(^1\) CES Press Release, Dec 2015
\(^3\) Kleiner Perkins Internet Trends Report, May 2015
millions, of drones flying in the sky have yet to be fully considered where safety and privacy issues remain unresolved.

Looking closer at current drone technology will show that they are still surprisingly immature. Due to limited payload capacity on drones, battery life remains a significant Achilles’ heel as even the most high-end consumer drones currently have a maximum flying time of only 15-25 minutes\(^4\). This limited battery life can frustrate even the most avid users. The durability of drones is also a concern as those that crash unexpectedly typically become unsalvageable. Additionally, many of today’s drones leverage standard wireless signals and radio frequencies that are still too vulnerable to unstable connectivity and hackers who can steal the data and footage collected by drones or even take control of the drones.

The promise of drones in undeniable, but whether drones will function responsibly at mass scale still remains unproven. Our hope is that more attention is paid to not just the devices themselves but how the creation of a sustainable ecosystem supporting them will be attained.

\(^4\) DJI Phantom 3 Standard Product Specification, Jan 2016
Unicorn Hunting Now in Season

Silicon Valley venture capitalist Aileen Lee famously coined the term “unicorn” in 2013 to anoint companies that reached the elusive $1 billion+ valuation club, a figure that less than 1% of all venture-backed startups ever reach. Astonishingly, there are now over 140 privately-held unicorns worldwide in existence (90% of which are tech companies), and 54 of them joined the club in 2015 alone. In mythology, the unicorn is supposedly untamable. However, for tech unicorns in 2016, we believe a number will lose their “mythical” status as they become hunted by the reality of slowing growth, weak fundamentals, high cash burns, and unrealistic expectations.

Volatile capital markets in 2015 that included a European debt crisis, Chinese stock market turmoil, and oil price plunges contributed to a choppy IPO market. Payments startup Square served as the unfortunate poster child of a lackluster IPO class as its first-day closing share price of $13.07 was below the $15.46 share price of its previous private investment round. Other IPO graduates such as Box and Etsy also struggled to cope with their status as newly-minted public companies and currently trade significantly below their first-day trading prices. We also saw the first visible valuation strains of privately-held tech unicorns late last year when fund manager Fidelity announced it was writing down some of its high-profile tech investments such as Dropbox, AppNexus, and Zenefits by as much as 25%.

With a shaky IPO market and many of the unicorns still too early in their development cycle to consider an IPO, we believe M&A and secondary share sale transactions will be the primary routes for exit in the near term. One big concern is that many of the large investment rounds continue to drive up valuations. Private valuation multiples have reached astronomically high levels where certain tech unicorns are currently valued at 100+ times revenues. While there is precedence of tech acquisitions achieving 100x+ revenue multiples, they are the extreme exception and usually only occur when a company is acquired for its technology or user base. Of the most active publicly-traded tech acquirers, only Facebook holds a revenue multiple above 10x. The disparity among public and private valuation multiples is increasingly alarming. With logic-defying valuations, many would-be acquirers or secondary share buyers cannot justify the price to acquire these tech unicorns in their current state. With a more challenging near term exit environment, the weaknesses of many tech unicorns will become more apparent, providing acquirers and investors with more leverage to chip away at their lofty valuations. These conditions are why we expect a number of tech unicorns to drop below the $1 billion valuation threshold in 2016.

However, we believe European-based tech unicorns will fare better than their U.S. counterparts. The European investment ethos is typically more disciplined and less tolerant of high cash burn rates, creating a higher bar for European-based tech startups to raise capital in the first place and forcing them to “earn” their unicorn status with more tangible fundamentals. Therefore, we anticipate the European unicorns to be more fit for survival.

In 2016, tech unicorns will be viewed with more scrutiny and no longer unconditionally heralded. We are already seeing some pundits and news media shift from counting new unicorns to counting new “unicorpses,” a term ironically also coined by Ms. Lee.

---

1 TechCrunch, Nov 2013
2 Wall Street Journal, Jan 2016
3 CapitalIQ, Wall Street Journal, Nov 2015
4 Morningstar, Fortune, Nov 2015
5 CapitalIQ, Jan 2016
No information set out or referred to in this research report shall form the basis of any contract. The issue of this research report shall not be deemed to be any form of binding offer or commitment on the part of GP Bullhound LLP. This research report is provided for use by the intended recipient for information purposes only. It is prepared on the basis that the recipients are sophisticated investors with a high degree of financial sophistication and knowledge. This research report and any of its information is not intended for use by private or retail investors in the UK or any other jurisdiction.

You, as the recipient of this research report, acknowledge and agree that no person has nor is held out as having any authority to give any statement, warranty, representation, or undertaking on behalf of GP Bullhound LLP in connection with the contents of this research report. Although the information contained in this research report has been prepared in good faith, no representation or warranty, express or implied, is or will be made and no responsibility or liability is or will be accepted by GP Bullhound LLP. In particular, but without prejudice to the generality of the foregoing, no representation or warranty is given as to the accuracy, completeness or reasonableness of any projections, targets, estimates or forecasts contained in this research report or in such other written or oral information that may be provided by GP Bullhound LLP. The information in this research report may be subject to change at any time without notice. GP Bullhound LLP is under no obligation to provide you with any such updated information. All liability is expressly excluded to the fullest extent permitted by law. Without prejudice to the generality of the foregoing, no party shall have any claim for innocent or negligent misrepresentation based upon any statement in this research report or any representation made in relation thereto. Liability (if it would otherwise have arisen) for death or personal injury caused by the negligence (as defined in Section 1 of the Unfair Contracts Terms Act 1977) of GP Bullhound LLP, or any of its respective affiliates, agents or employees, is hereby excluded nor is damage caused by their fraud or fraudulent misrepresentation.

This research report should not be construed in any circumstances as an offer to sell or solicitation of any offer to buy any security or other financial instrument, nor shall they, or the fact of the distribution, form the basis of, or be relied upon in connection with, any contract relating to such action. The information contained in this research report has no regard for the specific investment objectives, financial situation or needs of any specific entity and is not a personal recommendation to anyone. Persons reading this research report should make their own investment decisions based upon their own financial objectives and financial resources and, if in any doubt, should seek advice from an investment advisor. Past performance of securities is not necessarily a guide to future performance and the value of securities may fall as well as rise. In particular, investments in the technology sector can involve a high degree of risk and investors may not get back the full amount invested.

The information contained in this research report is based on materials and sources that are believed to be reliable, however, they have not been independently verified and are not guaranteed as being accurate. The information contained in this research report is not intended to be a complete statement or summary of any securities, markets, reports or developments referred to herein. No representation or warranty, either express or implied, is made or accepted by GP Bullhound LLP, its members, directors, officers, employees, agents or associated undertakings in relation to the accuracy, completeness or reliability of the information in this research report nor should it be relied upon as such. This research report may contain forward-looking statements, which involve risks and uncertainties. Forward-looking information is provided for illustrative purposes only and is not intended to serve as, and must not be relied upon as a guarantee, an assurance, a prediction or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and may differ from assumptions.

Any and all opinions expressed are current opinions as of the date appearing on the documents included in this research report. Any and all opinions expressed are subject to change without notice and GP Bullhound LLP is under no obligation to update the information contained in this research report.

The information contained in this research report should not be relied upon as being an independent or impartial view of the subject matter and for the purposes of the rules and guidance of the Financial Conduct Authority ("the FCA") this research report is a marketing communication and a financial promotion. Accordingly, its contents have not been prepared in accordance with legal requirements designed to promote the independence of investment research and it is not subject to any prohibition on dealing ahead of the dissemination of investment research. The individuals who prepared the information contained in this research report may be involved in providing other financial services to the company or companies referenced in this research report or to other companies who might be said to be competitors of the company or companies referenced in this research report. As a result, both GP Bullhound LLP and the individual members, directors, officers and/or employees who prepared the information contained in this research report may have responsibilities that conflict with the interests of the persons who access this research report. GP Bullhound LLP and/or connected persons may, from time to time, have positions in, make a market in and/or effect transactions in any investment or related investment mentioned in this research report and may provide financial services to the issuers of such investments.

The information contained in this research report or any copy of part thereof should not be accessed by a person in any jurisdiction where its access may be restricted by law and persons into whose possession the information in this research report comes should inform themselves about, and observe, any such restrictions. Access of the information contained in this research report in any such jurisdictions may constitute a violation of UK or US securities law, or the law of any such other jurisdictions. Neither the whole nor any part of the information contained in this research report may be duplicated in any form or by any means. Neither should the information contained in this research report, or any part thereof, be redistributed or disclosed to anyone without the prior consent of GP Bullhound LLP.

GP Bullhound LLP and/or its associated undertakings may from time-to-time provide investment advice or other services to, or solicit such business from, any of the companies referred to in the information contained in this research report. Accordingly, information may be available to GP Bullhound LLP that is not reflected in this material and GP Bullhound LLP may have acted upon or used the information prior to or immediately following its publication. In addition, GP Bullhound LLP, the members, directors, officers and/or employees thereof and/or any connected persons may have an interest in the securities, warrants, futures, options, derivatives or other financial instrument of any of the companies referred to in this research report and may from time-to-time add or dispose of such interests.

GP Bullhound LLP is a limited liability partnership registered in England and Wales, registered number OC352636, and is authorised and regulated by the Financial Conduct Authority. Any reference to a partner in relation to GP Bullhound LLP is to a member of GP Bullhound LLP or an employee with equivalent standing and qualifications. A list of the members of GP Bullhound LLP is available for inspection at its registered office, 52 Jermyn Street, London SW1Y 6LX.

For US Persons: This research report is distributed to U.S. persons by GP Bullhound Inc. a broker-dealer registered with the SEC and a member of the FINRA. GP Bullhound Inc. is an affiliate of GP Bullhound LLP. This research report does not provide personalized advice or recommendations of any kind. All investments bear certain material risks that should be considered in consultation with an investors financial, legal and tax advisors. GP Bullhound Inc. engages in private placements and mergers and acquisitions advisory activities with clients and counterparties in the Technology and CleanTech sectors.

In the last twelve months, GP Bullhound LLP is or has been engaged as an advisor to and received compensation from the following companies mentioned in this report: Auctionata, Avalanche Studios, Big Blue Bubble, Cinema, Essence, Farfetch, InnoGames, LendInvest, Klarra, ParStream, PocketMobile, Prodigy Finance, Renault, Rightware, Scopo, Smava, TicTrac.
Our Team

Hugh Campbell
Managing Partner

Manish Madhavani
Managing Partner

Per Roman
Managing Partner

Sir Martin Smith
Chairman

Mathias Ackermann
Non-Executive Director

Staffan Ingebom
Non-Executive Director

Mark Seba
Non-Executive Director

Graeme Bayley
Partner & Group CFO

Robert Ahldin
Partner

Guillaume Bonnefont
Partner

Alec Daffeiner
Partner

Ali Dagli
Partner

Ann Grevelius
Partner

Simon Nichols
Partner

Sven Raeymaekers
Partner

Julian Riedlauer
Partner

Andre Shortell
Partner

Claudio Alvarez
Director

Chris Graves
Director

Per Lindtorp
Director

Alexis Scorier
Director

Carl Wessberg
Director

Alessandro Casartelli
Vice President

Joakim Dal
Vice President

Malcom Horner
Vice President

Sebastian Markowski
Vice President

Ravi Ghezia
Associate

Mike Kim
Associate

Lenka Kolarova
Associate

Chris Park
Associate

Olof Ruzin
Associate

Johannes Åkermark
Associate

Iman Crisby
Business Development Manager

Harrin Needham
Finance Manager

Dave Hish
Technology Manager

Karl Blomsterwall
Analyst

Joshua Burge
Analyst

Luke Burns
Analyst

Johanna Conradson
Analyst

Matthew Finegold
Analyst

Okan Inalbay
Analyst

Marvin Maerz
Analyst

Oriane Millet
Analyst

Simon Miremadi
Analyst

Harriet Rosethorn
Analyst

Edwin Prior
Analyst

Christian Lagerling
Co-founder & Senior Adviser

Lord Clive Hollick
Senior Adviser

Matt Rogers
Senior Adviser

Cecilia Roman
Senior Adviser