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5 reasons to be skeptical of a \$1B Yahoo patent sale

Prepared by 3LP Advisors, LLC

June 9, 2016

As of the date of releasing this piece, 3LP Advisors, LLC is not directly involved in the Yahoo patent sale process as an advisor or investor. Consequently, all opinions expressed herein reflect views we independently developed, solely based on information that is publicly available. Our views could potentially change if we were to be made aware of relevant non-public information. Our views result from our independent evaluation of the assets and from our experience in the patent marketplace. We are not offering investment advice. Potential investors should conduct their own evaluation of the assets.

Key messages

- Yahoo is marketing a portfolio of seminal patents related to web search and advertising. Press attention has focused on the possibility of a \$1B+ sale
- While a few \$1B+ patent sales have occurred in the past, there are reasons to be skeptical that such a price will be achieved in this instance
- Investors and company Boards need to recognize the current environment for patent sales and should not be led astray by advisors emphasizing the high potential of this Yahoo transaction
- We can describe scenarios that would lead to a \$1B sale, but we handicap the likelihood of such a deal as very low

The media is reporting that Yahoo expects serious money from its patent sale

THE WALL STREET JOURNAL

Yahoo seeks to raise \$1 billion in patent auction

Published: June 7, 2016 9:10 p.m. ET



Mid-June deadline on bids for 3,000 patents

A Yahoo spokeswoman confirmed the company is exploring the sale of about 3,000 patents and pending applications. "This represents a unique opportunity for companies operating in the internet industry to acquire some of the most pioneering and foundational patents related to web search and advertising," she said in a statement.

We feel that that the valuation expectations being set are unrealistically high

5 reasons to be skeptical of a \$1B Yahoo patent sale

Reasons for skepticism

- 1** \$1B+ patent sales are a historical anomaly – only a few have occurred, all within the “patent bubble” of 2010-2013
Patent valuations are down significantly since the 2010-2013 era; no public deal of even \$50M in the last 18 months
 - 2** The legal and regulatory environment has changed significantly since the bubble years, which will directly effect Yahoo
The new ability to kill existing patents (esp. software) has created uncertainty, and courts have been unpredictable
 - 3** Smartphone patent wars drove most of the blockbuster patent deals, and there has been a détente
Most big tech cos signed cross-licenses (truces) and have bought vast troves of IP – reduced need for big purchases
 - 4** Yahoo may have already sold or licensed its most valuable assets
\$300M+ in past patent sales – the most logical buyers may already have access to the Yahoo IP they need
 - 5** No obvious \$1B buyer(s)
While several profiles of buyers should have interest at some price level, \$1B will be difficult for any of them to justify
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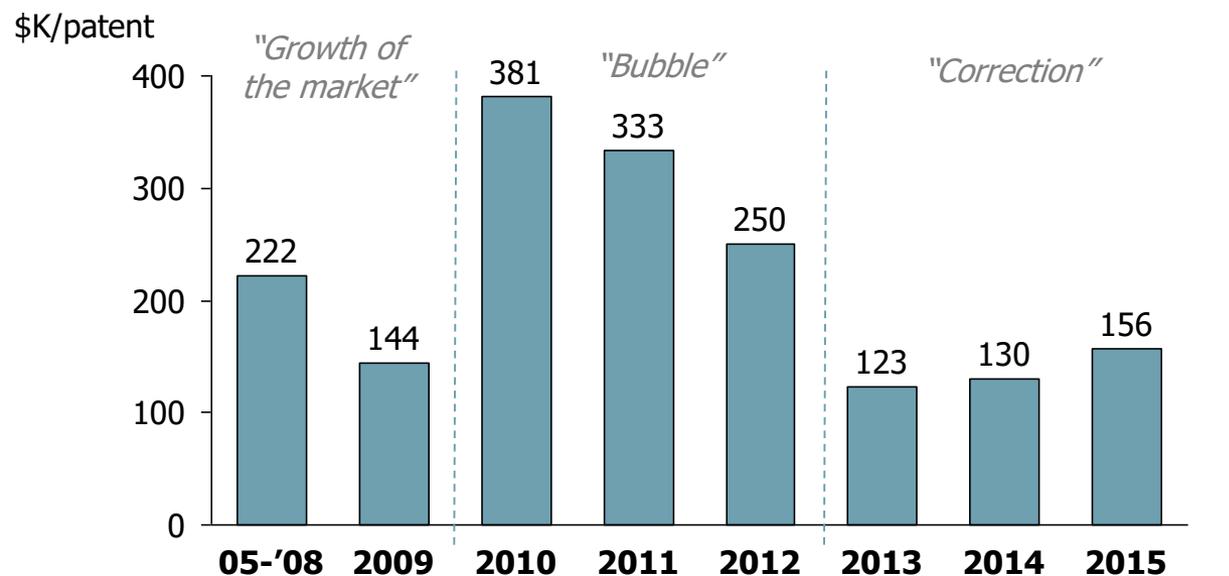
Ways it could work out for Yahoo

- “All you need is one” – a strategic buyer could decide it has to have this asset and meet the asking price. In particular, a cash-rich company with a perceived need for IP may be less price sensitive (e.g., emergent Chinese tech cos)
- A consortium of companies might pool together enough capital to approach the asking price
- Yahoo and its advisors may uncover numerous hidden gems in the portfolio and be able to demonstrate their value

Patent valuations experienced a bubble several years ago and have declined significantly since then

Median deal value by year (\$K/patent¹)

Commentary



- Over the past 18 months the median value of patent transactions tracked by 3LP is approximately \$150,000 per US issued patent - less than half the median value during the bubble years
- Volume of patent transactions also declined precipitously over the past few years. There are fewer active buyers and the majority of attempted patent sales do not close in a timely manner if at all

| | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|------------------|
| Transaction count | 12 | 14 | 13 | 23 | 46 | 44 | 46 | 16 |
| % of patent sale packages sold in first 9 months ² | --- | --- | --- | --- | --- | 16% | 10% | 13% ³ |

Notes:

1. Based on 3LP IP deal tracking database consisting of public sources and 3LP's own transaction experience. Calculations based on US issued patents

2. Source: Richardson Oliver Law Group. 3. First 8 months

We have to go back to 2014 to find publicly reported patent transactions of \$50M or greater

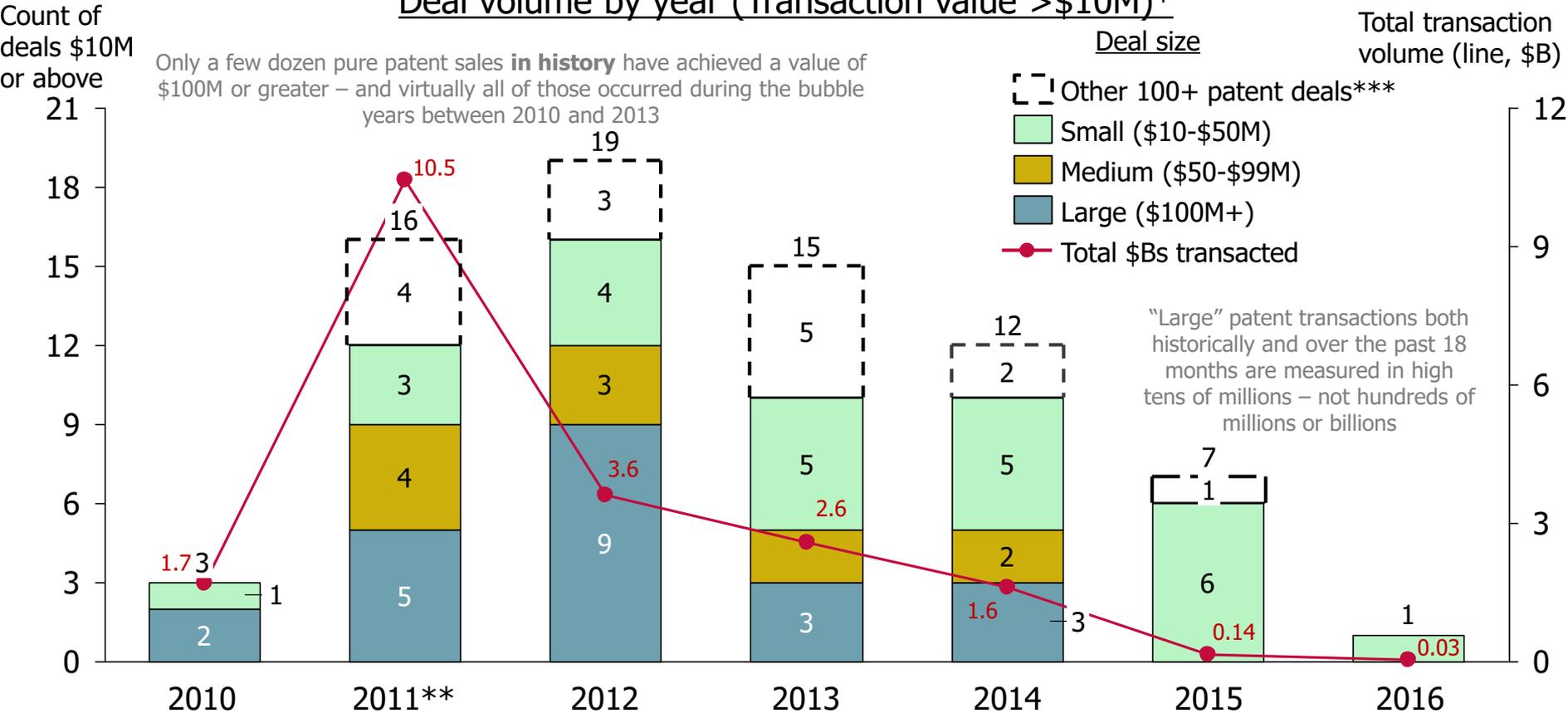
| <i>Seller</i> | <i>Buyer</i> | <i>Date</i> | <i>Price (\$M)</i> | <i># Patents</i> | <i>\$K/Patent</i> | <i>Technology/Notes</i> |
|--|--|-------------|---------------------------------|------------------|-------------------|---|
|  Microsoft |  Xiaomi | June 2016 | \$40M ¹ | 1,500 | 27 | Mobile devices; deal also included product collaboration/license |
|  Unwired Planet [™] | Optis UP Holdings | Apr 2016 | 40 | 963 | 31 | Wireless technologies for mobile devices (2G, 3G, 4G and cloud based applications and services) |
|  freescale [™] semiconductor |  WiLAN [™] | Nov 2015 | Revenue split / no upfront cash | 3300 | Not public | Processors, memory, semiconductor packaging, wireless, and IoT |
|  infineon |  WiLAN [™] | June 2015 | 33 | 7,000 | 5 | DRAM, FLASH memories, semiconductor, lithography, packaging |
| Rockstar  |  RPX [®] RATIONAL PATENT [®] | Dec 2014 | 900 | 4,000 | 225 | Telecommunications (previously the Nortel Networks portfolio) |
|  Qimonda |  infineon | Sept 2014 | 320 | 7,500 | 43 | DRAM, FLASH memory |
|  Unwired Planet [™] |  lenovo | April 2014 | 100 | 142 | 704 | Telecommunications infrastructure including mobile device technologies; deal includes license |
| Rockstar  |  SPHERIX | Jan 2014 | 60 | 101 | 594 | Access, switching, routing, optical/voice communication network devices |

Note: 1. Xiaomi deal size not confirmed, but reported here in Mandarin:

http://mp.weixin.qq.com/s?biz=MzA5MDU0MTc3Ng==&mid=2653742245&idx=1&sn=0a45aedb3ae944cf3e4b668717b6847e&scene=4#wechat_redirect, which was referenced by IAM (<http://www.iam-media.com/blog/Detail.aspx?q=71017e81-a7d4-4427-9426-f3dc0edc46da>)

\$100M+ deals are rare historically

Deal volume by year (Transaction value >\$10M)*



Even for a seminal portfolio like Yahoo’s, a \$1B deal would be an outlier – a nine-figure deal should be viewed as a success in the current environment

*Histogram includes estimates for deals where purchase prices are not reported
 **MOTO/Google deal assumes \$4.5B purchase price based on industry estimates of value allocated to patent portfolio
 ***Pricing information for these deals is not publicly available

Changes in the legal and regulatory environment make it more difficult to justify high valuations

Legal/regulatory shift

Description

Impact

Introduction of new mechanisms to challenge and kill (invalidate) existing patents

- The America Invents Act (2011) created proceedings such as inter partes reviews (“IPRs”), which allow third parties to challenge a patent’s validity (i.e., enforceability)
- If the challenger wins, the patent is invalidated – the ability to enforce the patent is revoked, thereby rendering it worthless

- Third parties have successfully invalidated a high percentage of patents through the IPR process
- High cancellation rate creates risk, reduces value for any patent; defending an IPR can cost \$500K over 2-3 yrs through appeals

Legal rulings call into question the validity of many existing patents related to software

- The US Supreme Court’s *Alice v. CLS Bank* (2014) decision allows third parties to challenge the enforceability of existing, granted software patents
- *Alice* creates uncertainty as to whether software is “patent-eligible” subject matter – even if the patent office previously allowed the patent

- Courts have ruled that numerous software patents are no longer enforceable
- Uncertainty reduces value for any patent that relates to software – **Yahoo patents susceptible**

Changes in how patent damages are awarded (and upheld) in the US court system

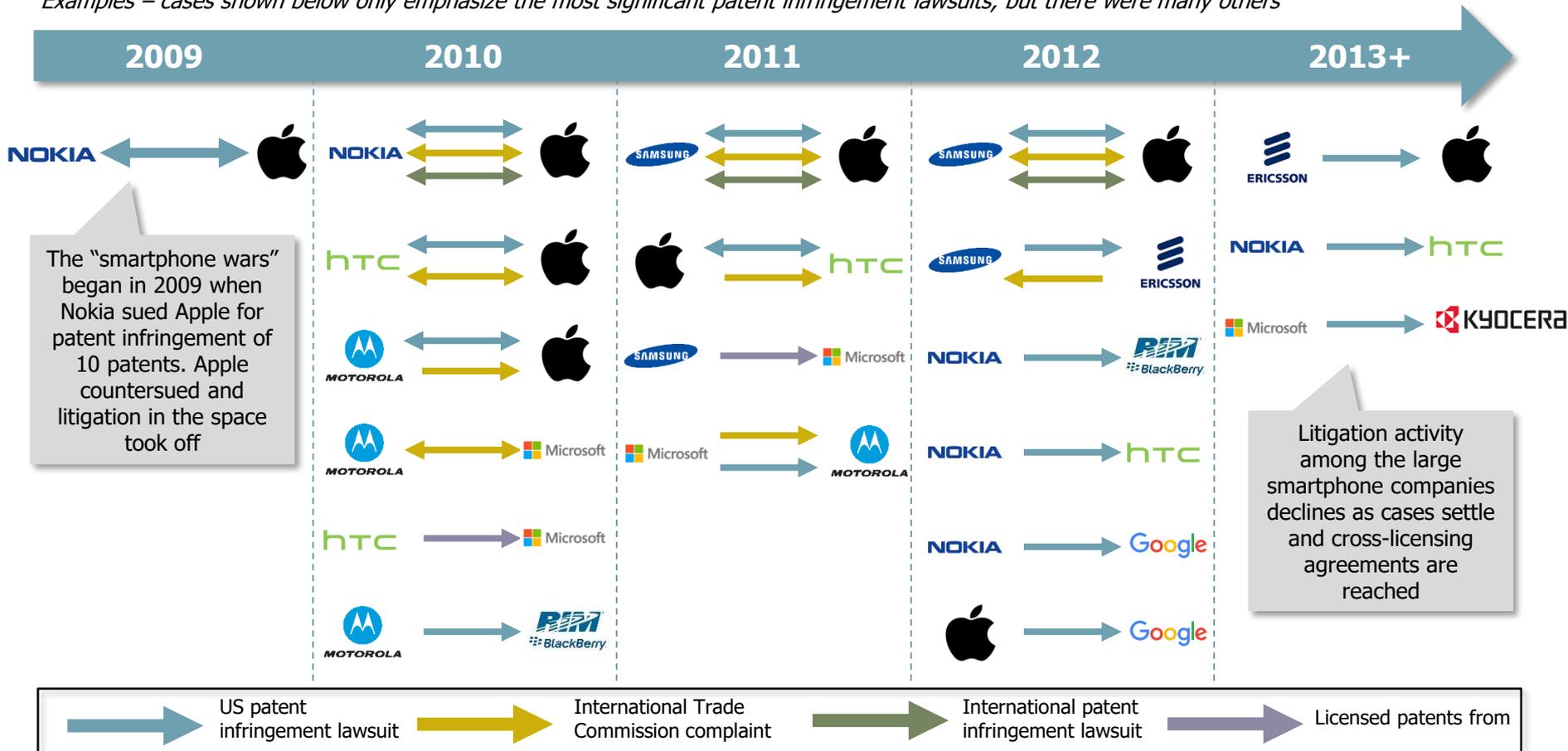
- \$ awards to owners of infringed patents have been unpredictable: judicial views on damages are evolving and jury verdicts are uncertain
- General “anti-patent” zeitgeist makes enforcement of patents more difficult

- More than \$1B in damages awarded by federal US jury verdicts have been thrown out over the last several years¹
- Uncertainty around what will hold up in court reduces patents’ value

Note: 1. E.g., Smartflash, VirnetX, ParkerVision, and Vringo verdicts (in some cases re-trials issued)

As the smartphone patent wars die down, big tech cos have less of an incentive to buy new IP

Examples – cases shown below only emphasize the most significant patent infringement lawsuits, but there were many others



After years of litigation, many of the large tech cos have signed cross-licenses (truces) with competitors – less of a need to pay top dollar for portfolios like Yahoos

Furthermore, many big tech cos spent lots of money buying large patent portfolios – there has been a “hangover” effect

Example transactions

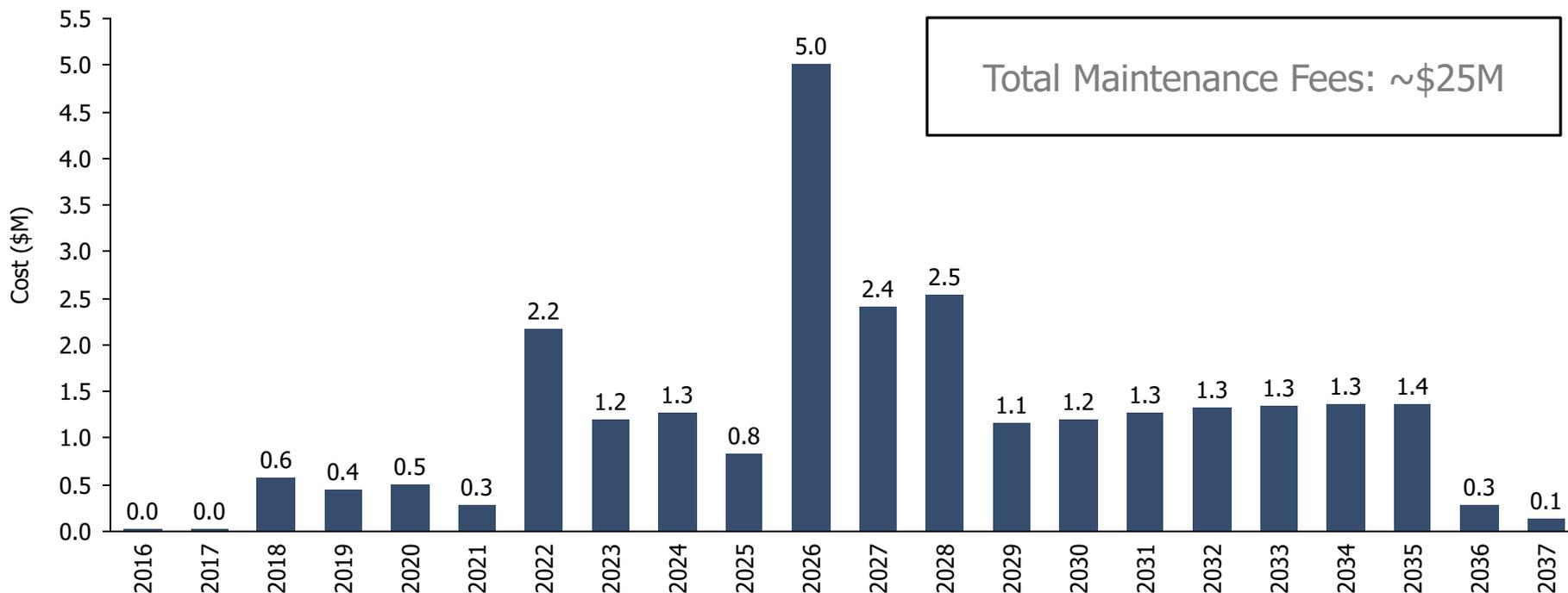
- **Google:** acquired Motorola Mobility in 2012 for \$12.5B (10s of thousands of patents)
- **Apple:** acquired patents from Nortel in 2011 as part of the \$4.5B Rockstar consortium purchase
- **Microsoft:** acquired patents from AOL in 2012 for \$1.1B
- **Facebook:** acquired certain ex-AOL patents from Microsoft in 2012 for \$550M
- **Lenovo:** acquired/licensed patents from Unwired Planet in 2014 for \$100M
- **Twitter:** acquired 900 patents from IBM in 2014 for \$36M

Note: while at first glance one may look at the AOL deals as comps for Yahoo, keep in mind that the Alice software ruling occurred in 2014 – 2 years after AOL had already sold the patents. Those same AOL patents would likely sell for much less today because of “Alice” risk

Do any of these companies feel the need to spend \$1B on more patents?

One reason buyers don't necessarily value bulk: it costs money to maintain a patent

Estimates of Maintenance Fee Payments Required for the Yahoo Patents



Yahoo's portfolio of ~3,000 patents will cost roughly \$25M simply to maintain; Buyers that already bought in bulk are now more focused on a small number "gem" patents so they don't have to pay just to keep piles of patents alive

Note: Includes US and foreign equivalents of all US granted patents assigned to Excalibur IP LLC, the entity into which Yahoo transferred ~1,700 US granted patents on April 18, 2016. We have used this patent list as a proxy for the patents for sale – this is an estimate as Yahoo has not publicized the patent list for sale. Using this list, we estimated the maintenance fees that would be due in covered geographies. We assumed that only 75% of applications will ultimately grant and that grants occur in the next three years. Furthermore, we assumed that WO applications are converted primarily to CN, DE, and GB; Our analysis excludes redundant CN and US applications.

Yahoo has sold lots of patents already – is the best stuff gone?

In Yahoo's 2015 10-K pg. 58, it reports \$339M in gains from 2013-2015 patent sales

| <i>Buyer of Yahoo patents</i> | <i>Year</i> | <i>Deal Size</i> | <i>Est. # of patents</i> |
|--|-------------|-------------------------|--------------------------|
|  HUAWEI | 2016 | Not known | ~15 |
|  snapchat | 2015 | Not known | ~10 |
| Jollify Management | 2015 | Not known | ~10 |
| LinkedIn | 2015 | Not known | ~10 |
| Energetic Power Investment Limited | 2014 | Not known | ~25 |
|  | 2014 | Not known | ~50 |
|  Alibaba.com | 2014 + 2013 | \$24M gain + \$70M sale | Not known |
| match.com | 2013 | Not known | ~5 |
| PANDORA | 2013 | Not known | ~5 |
| VISA | 2012 | Not known | ~5 |

One has to wonder if the best patents in the portfolio have already been picked over by buyers and whether lower quality assets remain. Of course it is also possible that the patents currently for offered sale were not available for sale previously

Note: Examples based on Yahoo's public filings and from the publicly available US patent reassignment database. "Energetic Power Investment Limited" may be an Alibaba subsidiary, but that is conjecture based on the timing of the patent reassignment and the second sale to Alibaba shown in Yahoo's 10-K. If that is the case, we are potentially double counting that transaction in the table above. Yahoo also reports a sale of patents to Yahoo Japan, which we are not including in the table above or in the \$339M figure in the slide subtitle

Realistically, who is left to pay \$1B for these assets?

None of these seem likely to us, but some are less unlikely than others

Higher likelihood buyers

Illustrative only

Most unlikely to pay \$1B

| Category of Potential Buyer | Examples of Companies | Why/Why Not a \$1B Buyer |
|--|---|--|
| "Recently" emergent Chinese tech companies | Tencent, Baidu, Xiaomi, Oppo | <ul style="list-style-type: none"> Lots of cash; in theory could swallow a \$1B portfolio Xiaomi has made some purchases already, however (Intel, Microsoft, Broadcom patent acquisitions) Is IP important enough to them to spend \$1B? |
| Consortium of companies | Historical examples include Rockstar Bidco (Nortel), RPX/Intellectual Ventures-led consortium (Kodak) | <ul style="list-style-type: none"> A group of companies might be more likely to collectively pay \$1B than an individual company But patent aggregator-organized consortia (e.g., RPX) have never paid \$1B; at most, \$100s of millions Rockstar paid \$4.5B for Nortel's patents, but in 2011 |
| Companies that have already bought patents from Yahoo | Alibaba, Huawei, Snapchat, LinkedIn, Pandora | <ul style="list-style-type: none"> They already know how to get a deal done w/ Yahoo Alibaba has paid ~\$100M – far less than \$1B If they already got the patents they wanted, they may have less interest here, esp. for a \$1B price |
| Tech companies active in the smartphone wars | Google, Microsoft, Apple, Facebook, Ericsson, Nokia, Amazon, Samsung, LG, HTC, Lenovo | <ul style="list-style-type: none"> Many already spent lots of money on lots of patents With cross-licenses in place following smartphone wars, new patents do less for them Why spend another \$1B and take on the costs? |
| Converging industries (e.g., automotive, digital media) | Auto: Ford, GM, Hyundai, Tesla, Uber, Lyft Digital media: Netflix, Rovi/Tivo, Comcast, Dropbox | <ul style="list-style-type: none"> As the tech industry converges with other industries, new players will need tech IP More likely to buy a targeted number of patents for an amount smaller than \$1B |
| Non-practicing entities "NPEs" (buy patents and monetize through licensing/litigation) | Intellectual Ventures, Acacia, Wi-LAN, Conversant, Marathon | <ul style="list-style-type: none"> Because of the risk of enforcement, these companies tend to avoid large up-front payments (prefer revenue sharing/"back-end"-loaded deals) Most NPEs don't have \$1B to spend; if they spend 7-figures that's a big deal for them |

Note: list of companies is exemplary only; not intended to be comprehensive

Though a \$1B patent sale is unlikely, “it ain’t over ‘til it’s over”

- **It just takes one buyer that feels the need to pay \$1B**
 - One never knows how parties will act in competitive auctions, and patent sales for at least \$1B *have* occurred (though very few ever and none recently)
- **A cash-rich company with a perceived need for IP might be less price sensitive**
 - For example: an emergent Chinese technology company that wants to acquire a marquee portfolio at any price (within reason)
- **The value will increase if the patent broker can uncover a large number of gems in the portfolio and show that the patents are infringed and valid**
 - A critical mass of believable and detailed claim charts/evidence of use analyses will improve the chances of a higher valuation
- **Several cases under review by US courts could be resolved in the next several months, and could swing the pendulum in favor of patent values**
 - Court rulings related to the IPR process (e.g., *MCM Portfolio* and *Cuozzo Speed Technologies*) and patent damages (e.g., *Commonwealth Scientific and Industrial Research Organization*, *Stryker Corp.* and *Halo Electronics*) could benefit valuation for all patents (but still a long way to go to reach \$1B...)

Appendix

About 3LP

3LP Leadership Team

Kevin Rivette, JD

Founding Partner
Founded 3LP in 2008

- Former Vice President (IP Strategy) at IBM and former Chairman of the USPTO oversight committee
- Former board member at Tessera (Nasdaq: TSRA) and SRC Computers; current board member of MiMedia
- Former senior advisor to BCG on IP matters; founder/CEO of Aurigin Systems, an IP analytics software firm
- Media expert in IP for Bloomberg TV, The New York Times, Businessweek, and others
- Named to the National Law Journal's inaugural list of IP "Trailblazers and Pioneers" in 2014
- Named to IP Hall of Fame in 2007; author: Rembrandts in the Attic; registered patent attorney

Ralph Eckardt, MBA

Founding Partner
Founded 3LP in 2008

- Launched and led BCG's IP Strategy practice
- Included on IAM's list of World's Leading IP Strategists since its inception
- Extensive experience in technology and IP strategy projects across a wide variety of technologies and markets
- Author of *The Invisible Edge* – Awarded Best Strategy Book of 2009
- Principal inventor, N-Compass IP analysis tool
- MBA, MIT Sloan School of Management, Former CPA, 18+ yrs professional service experience

David Morland, MBA

Partner
Joined 3LP in 2008

- Formerly Project Leader at BCG, leads IP transaction advisory at 3LP
- 3LP focus areas: IP monetization strategy, technology and IP diligence, advising buyers & sellers of IP assets
- Frequent speaker on IP transaction market and publicly-traded IP companies
- Formerly BD at Cubist Pharmaceuticals and Strategic Marketing at Symantec Corporation
- *BA/BE*, Dartmouth College; *MBA*, Harvard

Andy Filler, JD

Partner and General Counsel
Joined 3LP in 2014

- Voted #2 corporate IP attorney in Silicon Valley in 2011 by the Silicon Valley Business Journal
- Current member of the Board of Governors at the University of San Francisco Law School
- Formerly General Counsel and VP of IP at Nanosys, Inc.; Chief IP counsel at Caliper Technologies
- Senior Associate at Weil, Gotshal & Manges
- *BS Mech. Engineering* from Cornell; JD, *magna cum laude*, University of San Francisco Law School

Mark Gober

Senior Director
Joined 3LP in 2010

- UBS Investment Bank, Financial Institutions Group in New York: M&A, capital raising, and restructuring
- 3LP focus areas: technology monetization strategies, patent transactions, and publicly-traded IP companies
- Quoted in Bloomberg Business and *The Patent Investor* (a subscription newsletter) on tech/IP matters
- Author of Intellectual Asset Magazine's feature article "PIPCO investing in a brave new world" (Dec. 2015)
- *B.A.*, Princeton University, *magna cum laude*; Princeton varsity tennis captain

A rich heritage of technology strategy, IP analytics, and high-tech M&A

Roots in the premier names in strategy, technology, and intellectual property

Breaking the mold

Demonstrated success

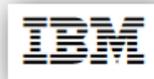
1999 – 2007

2007 – 2008

2008 – present

Prestigious heritage

- 3LP's founders ran The Boston Consulting Group's IP strategy practice
- Advised prominent companies with vast IP portfolios
- After 2 years at BCG, Kevin departed to run IP strategy for IBM, the world's largest patent holder



3LP

Founded in 2008

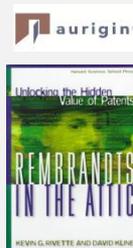
- 3LP's founding partners left BCG and IBM and reunited to explore client success opportunities
- First engagement was running an IP acquisition fund for Tessa Technologies (TSRA), which contributed to the successful renewal of key licensees

Steady growth

- Worked for 25+ clients since its founding
- Advised participants in transactions that are cumulatively valued in the hundreds of millions of dollars
- Industry leaders such as Intel, Xerox, Mars Inc., and Seagate
- Emerging technology companies including Unity Semi., Nanosys, and many others

There at the beginning

- 3LP founder Kevin Rivette built IP analytics firm Aurigin (now part of Thomson tool suite)
- First to digitize US patent database in structured form
- In 1999, Kevin wrote the seminal IP strategy book Rembrandts in the Attic

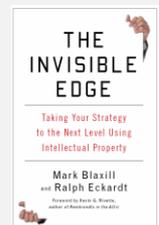


Limits to the "BCG" model

- BCG focused on consulting for large companies
- Inflexible model: unable to execute transactions or advise on a success fee or equity basis
- Difficult to work with smaller companies
- Too many conflicts of interest

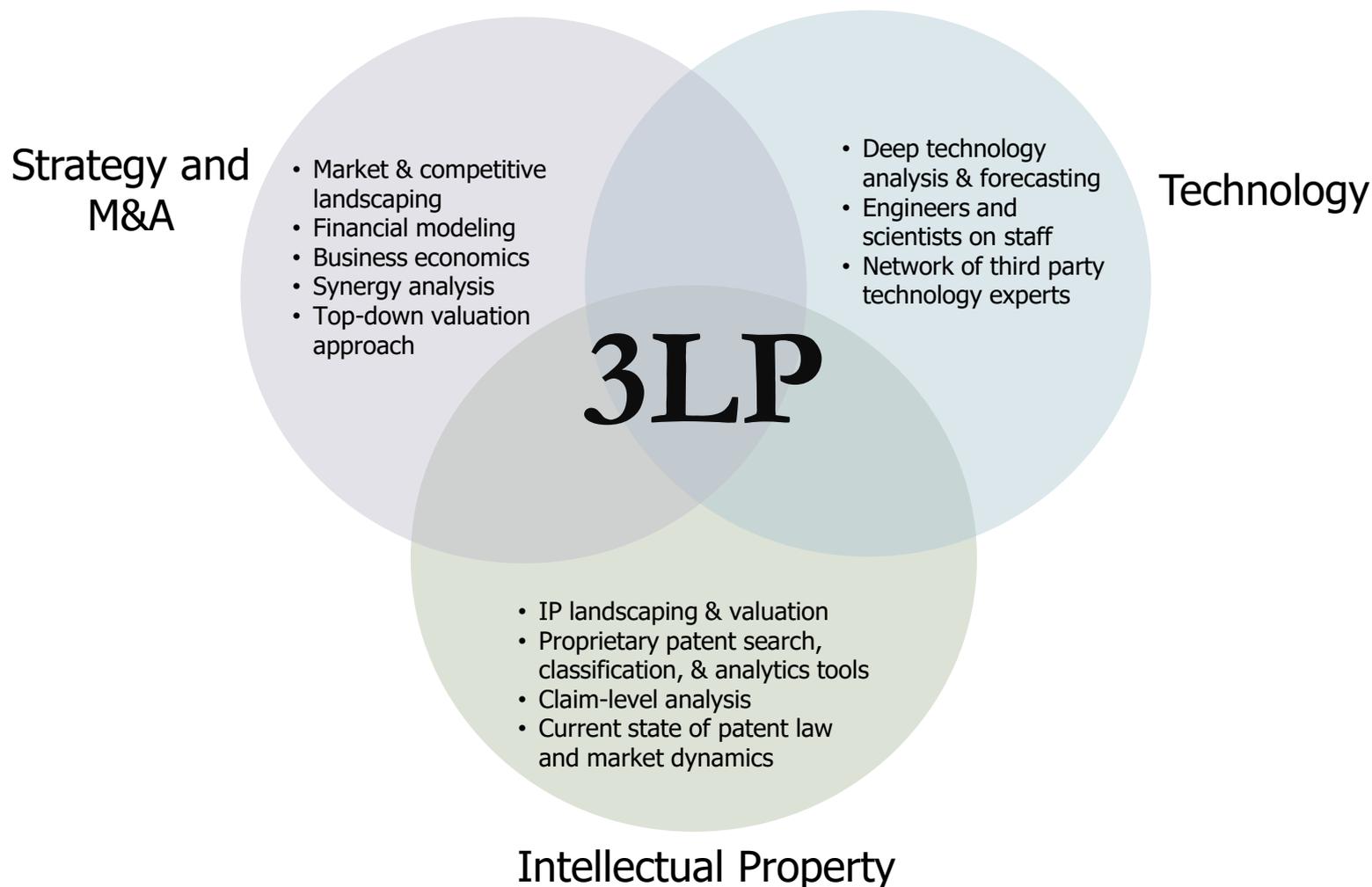
Ongoing thought leadership

- 3LP founder Ralph Eckardt co-authored The Invisible Edge
- Named the best strategy book of 2009 by "strategy+business" magazine
- 3LP partners are frequent speakers on topics related to IP markets and strategy



Unique integration of expertise in multiple disciplines

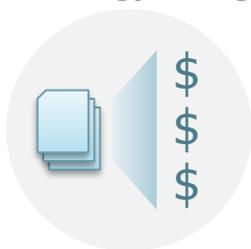
3LP operates at the intersection of business, technology and law



Our businesses

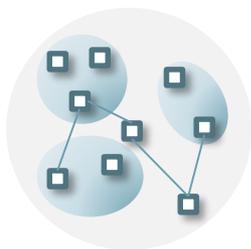
Strategy

Technology strategy



- Competitive Landscaping**
- Technology Assessment**
- Partnership Analysis**

IP strategy



- Monetization Strategy**
- Corporate-level IP Strategy**
- IP Portfolio Development**

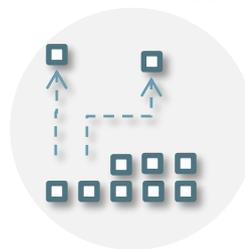
M&A for Technology and IP

Transaction execution



- Divestitures**
- Acquisition Programs**
- Licensing**

Transaction support



- Due Diligence**
- Valuation**
- IR/PR Support**

Our clients

3LP works with large and small companies in a variety of industries (not just “high tech”)

Example client profiles

Typical predicaments encountered by 3LP clients

Fortune 500 companies
(technology-driven businesses,
not just “high tech”)

- What should our strategy be in an evolving technology landscape?
- How should we prioritize our investments in technology development?
- What is the value of our core and non-core technology and IP assets?
- What is the best way to monetize those assets?

Emerging technology companies
(e.g., early stage start-ups)

- How can we leverage our technology and IP assets to improve deal terms?
- When and how should we file patents? Should we hold trade secrets instead?
- How can we demonstrate to potential investors that our IP is valuable?
- How should we prioritize business development and partnership opportunities?

Licensing companies
(product businesses, small
innovators, etc.)

- What is our monetization strategy and how will we grow the business?
- What technology sectors should we be targeting for acquisitions?
- What assets should we buy and how should we structure those deals?
- How should we structure our organization and prioritize investments?

Investors
(venture capital, private equity,
hedge funds, etc.)

- Can we monetize the technology and IP in a struggling portfolio company?
- How should we value technology and IP when considering an acquisition?
- Is our investment target’s technology truly advantaged?
- How well does our investment target’s IP protect its competitive differentiation?

Investment banks
(bulge bracket or boutique)

- How should we evaluate and communicate the value of technology and IP assets that are key drivers of a transaction?

Additional 3LP team members

Calvin Wong

Director

Calvin joined 3LP Advisors in 2011 as an Associate in the Silicon Valley office. Previously, he was a Staff Engineer at Broadcom Corporation where he focused on IC (integrated circuit) packaging and system thermal design. Calvin attended UC Irvine where he was a member of Tau Beta Pi, and graduated with a double major in Mechanical Engineering and Materials Science Engineering.

Colin Santangelo

Associate

Colin joined 3LP Advisors in 2013 as an Analyst in the Boston office. Previously, he worked as a consultant at Endeavour Partners, a boutique consulting firm specializing in telecoms and the mobile ecosystem, and as an engineer at tool, inc., a product design firm. Colin graduated from Harvard University with a B.S. in Mechanical Engineering and Materials Science. He was a four-year skipper on the Harvard Sailing Team, as well as co-chair of Leverett House.

Bruna Favetta

Analyst

Bruna joined 3LP in 2015 as an Analyst based in the Boston office. She graduated from Princeton University with a major in Chemical and Biological Engineering. Previously, Brunna worked as a summer analyst for Locus Analytics, an asset management start-up, and as a researcher in computational biology at the Stockholm Resilience Center.

Kaitlin Maier

Analyst

Kaitlin joined 3LP in 2015 as an Analyst in the Boston office. Kaitlin earned a BA in Engineering Sciences from Dartmouth College and a BE in Mechanical Engineering from Dartmouth's Thayer School of Engineering. Previously, she interned as a Product Engineer at Casper, a mattress startup company, and as a Markets Analyst at Royal Bank of Scotland. In college, she worked on human-centered design projects in the women's health field.

Matt Mahoney

Analyst

Matt joined 3LP in 2015 as an Analyst in the Silicon Valley office. He graduated from Dartmouth College as an Economics major and Government minor with concentrations in finance and law. Matt previously interned at the University of Virginia Investment Management Company, where he worked on analysis for investment decision-making and risk management. At Dartmouth, Matt was also the captain of the club soccer and club basketball teams.

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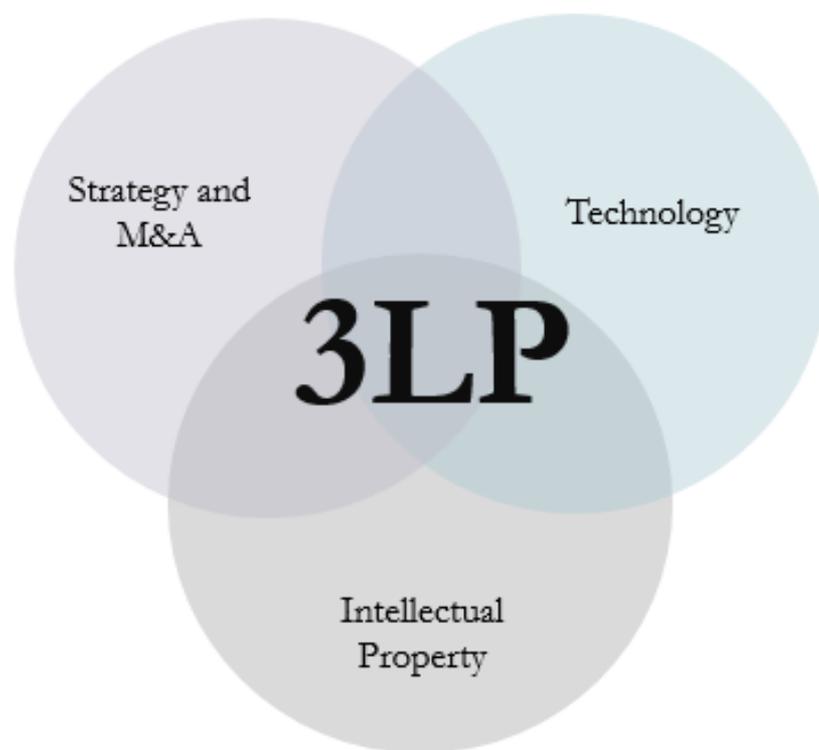
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