

LOT NETWORK REPORT 2021



The world's largest
portfolio reduces risk from
Patent Assertion Entities

LOT Asset Activity:

2,200 LOT assets now owned by PAEs

23,017 total assets have left LOT

Since the last report, we've added to our community:

729 companies, for a total of **1,800** members

597,951 patent assets

77 companies with at least **a billion in annual revenue**

LOT now has:

2nd, 3rd, 4th and 5th largest global patent holders

15% of all active US patents covered by LOT

Produced in
association with



**RICHARDSON
OLIVER
INSIGHTS**

WELCOME

In seven short years, LOT Network has rapidly transitioned from an experiment of the high-tech industry, to the largest global community of companies solving the Patent Assertion Entity (PAE) issue.

LOT Network now counts as members:

- All 8 of the world's largest cloud providers
- All 7 of the world's largest automakers
- 6 of the world's 10 largest software companies
- 9 of 10 largest banks in the US, including #1,
- 7 of 10 largest retailers in the US, including #1,
- 2 of 3 largest wireless carriers in the US, and the second, third, fourth, and fifth largest patent holders in the world.

There truly is safety in numbers. With over 1,800 members and counting, and an annual growth rate of 107%, this list is growing rapidly.

IN FACT, 16 COMPANIES WITH OVER \$1 BILLION IN ANNUAL REVENUE JOINED LOT NETWORK IN THE FIRST TWO WEEKS OF NOVEMBER 2021 ALONE.

Our members have made the same commitment to protect innovation that applies to all of their patents. The LOT Agreement preserves the traditional uses of patents, yet grants a license to the other members if, and only if, a member's patent asset ever falls into the hands of a PAE.

LOT Network Members are now immunized against more than 3.3 million patent assets, which includes over 15% of all active, US issued patents. More importantly, so far we have identified six different transactions involving a PAE, resulting in at least 2,200 assets being transferred to a PAE that were formerly owned by a LOT member. As long as a LOT member joined prior to those assets leaving, they are now enjoying the benefit of a free license.

No longer is LOT a case of "if or when", but rather a proven community of "now and already licensed." While the growth of LOT Network is unprecedented, so too is the economic impact of the global pandemic. The ever changing economic environment has prompted many companies to offer patents up for sale. The increase in the number of patents available for purchase by PAEs will, in turn, inevitably lead to more litigation. RPX already has reported an 11% increase YoY in PAE litigation through Q3, 2021.¹

This report is published with the support of Cipher, who is responsible for tracking the patent portfolios of the 1,800+ LOT Network members and Richardson Oliver Insights, who produce regular reports on the secondary patent market. It presents evidence that is compelling and irrefutable. The convergence of technology has drastically increased the total addressable market (TAM) for PAEs. With the larger number of assets that are on the market for sale, PAEs are confident they can acquire assets and still achieve a reasonable ROI on their investment through litigation and licensing even if they acquire assets from LOT Network members.



Ken Seddon

Ken Seddon
CEO, LOT Network
November 2021

¹ RPX Q3 in Review October 2021 Report

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PATENT ASSERTION ENTITY RISK

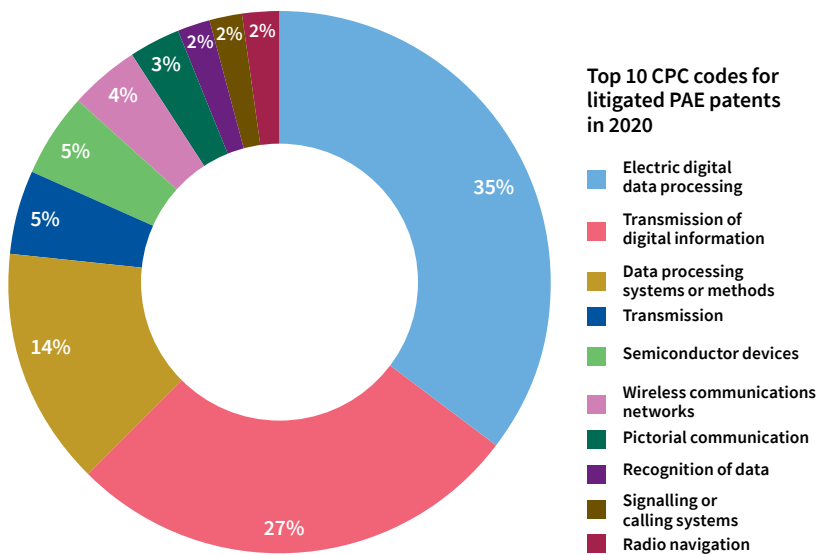
Understanding PAEs

Patent Assertion Entities (PAEs) are companies whose business model is to acquire patents and assert them against companies that sell products. By one estimate, PAEs are responsible for 87% of US high-tech patent litigation.² Operating companies spend billions each year litigating and settling with such companies. This is particularly frustrating to operating companies because they can't use their patents in response, and this expenditure is not being put towards research and development, improved manufacturing, new products, or returned to investors.

In the past 12 months, PAEs asserted 1,375 patents in over 2,000 litigations worldwide.

This includes PAE litigation in China and Europe. Chart 1 highlights the top 10 technology areas of the patents that were the subject of these litigations in the US. Not surprisingly, PAEs are leveraging the convergence of technology and using patents in their campaigns that are likely to have broad applicability across multiple industries. This strategy maximizes the total available market (TAM) that a patent may be asserted against. As technologies such as AI, wireless communications, software, security, cloud computing, etc. migrate across industry borders, and claim language remains agnostic, more and more companies potentially become defendants.

Chart 1: Software, data/image processing, wireless communications most commonly used patents by PAEs.



Source: Cipher



"As one of the earliest members of LOT, and the first in financial services, JPMorgan Chase is proud to have contributed to LOT's growth over the past 7 years. We continue to be committed to increasing innovation and protecting patent rights. LOT provides its members around the world opportunities to come together to create business impact in important areas beyond patent risk, such as diversity, equity and inclusion and ESG, which we'll continue to help drive forward."

Daryl Wooldridge, Managing Director and Head of Intellectual Property, JPMorgan Chase & Co.

² <https://www.unifiedpatents.com/insights/2019/12/30/q4-2019-patent-dispute-report>

As reported in the recent Richardson Oliver Law Group study for the past six years, corporate sellers supply the vast majority of the patents to PAEs. From 2014 to 2020, on the open patent market, operating companies have sold 6,999 patents to PAEs, representing 65% of the total patents sold to PAEs. In 2020, operating companies sold 80% of the patents purchased by PAEs. Chart 2 shows what percentage of the patents bought by PAEs came from which source. Operating companies generally supply the lion's share of patents on the secondary market, but in particular, they are the largest supplier to PAEs.

Each year, corporations supply between 500 and 1,500 patents to PAEs through this channel. This may seem like a drop in the bucket. But the story does not end there. Once PAEs buy patents from an operating company, they tend to buy more patents; Richardson Oliver's analysis shows that PAEs continue to return to the same seller again and again once they have made the first purchase. Often these subsequent patent purchases are made

privately meaning that even if you had wanted to bid on those patents, the opportunity did not exist.

Chart 3 shows how PAE purchases have increased over time. In 2020, PAE purchases jumped to over 50% of the purchases in the open market, but declined in 2021 as operating companies loosened their budgets and began buying again. Richardson Oliver Law Group tracks patent sales and particularly focuses on patents on the open public patent market – these are typically patents sold by patent brokers and repeat direct sellers. Every year, about 10-20K patent assets enter the market this way. Whether used for patent licensing, defensive strategy through counter-assertion, or some other purpose, these patents have a much higher chance of being “used.” PAEs continue to acquire assets from operating companies and expect to make a reasonable return on their investment by asserting them against operating companies.

Chart 2: Who supplies PAEs with patents

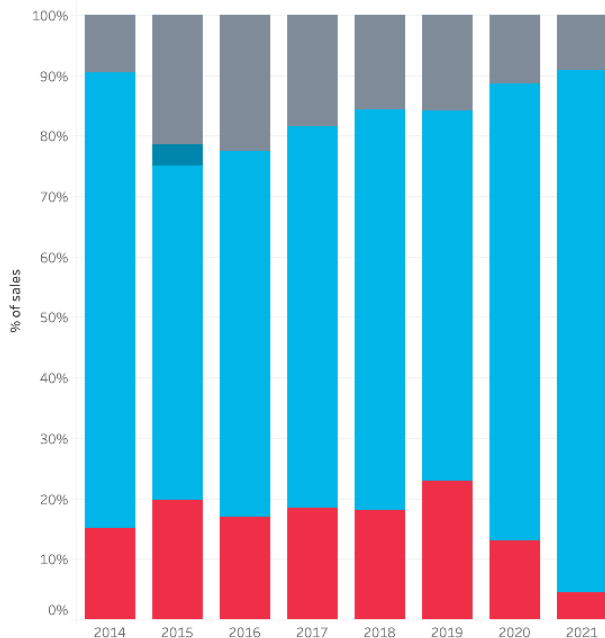
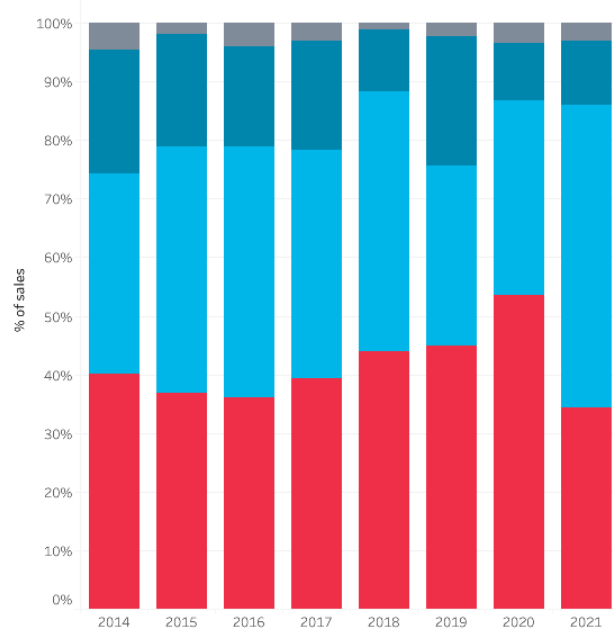
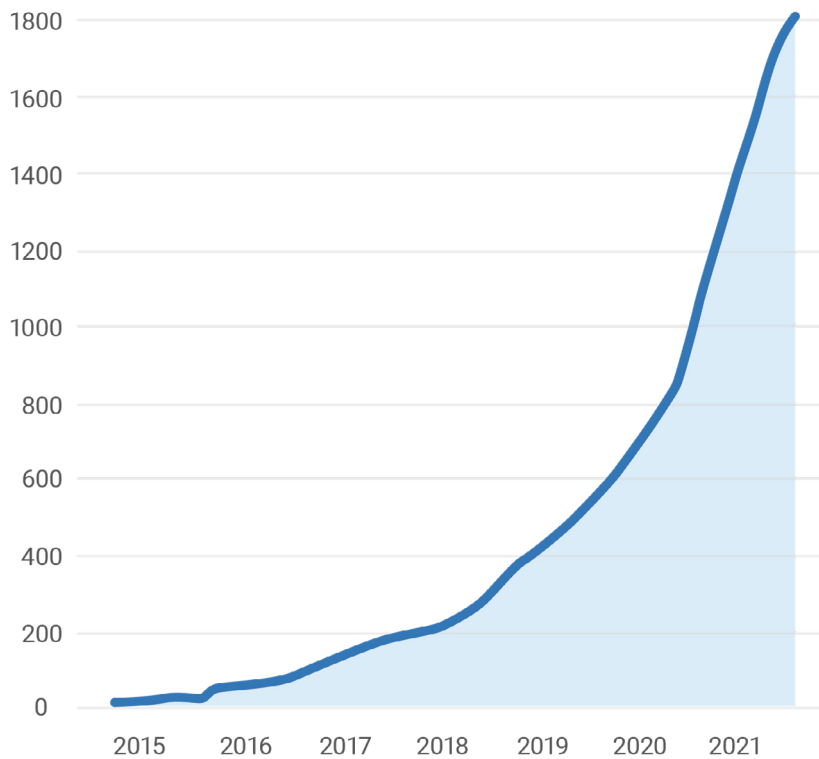


Chart 3: Percentage of patents bought by PAEs



Other Defensive Aggregator OpCo NPE

Chart 4: LOT Network - Membership growth over time



At Yokogawa, as part of our business transformation, we are advancing more into the Industrial Internet of Things space; consequently the use of information technology is increasing significantly. With our membership in LOT Network, we will be able to continue to thrive with our co-innovation DNA while protecting the appropriate uses of patents.

Tsuyoshi Abe, Senior Vice President and Head of Marketing Headquarters, Yokogawa

Understanding LOT Network

Since operating companies are primarily the ones who are causing the PAE problem by selling their assets to PAEs, LOT Network was formed as a community of companies who are taking responsibility for this problem through a private ordering solution. LOT Network members agree to grant each other a non-exclusive, conditional license if any of their patent assets are ever transferred to a PAE.³ At the same time, LOT members respect the traditional uses of patents, and are free to continue to use their patent assets in any way they see fit. In effect, LOT Network members have addressed the root cause of the PAE issue and immunized themselves from the risk of PAEs, while preserving all the normal uses of their patents.

To date, LOT Network has identified over 2,200 US patents now owned by PAEs that were formerly owned by LOT members. There were at least six direct transfers from a LOT member to a PAE that were either a direct sale, or the result of a settlement negotiation (i.e. a LOT Network member wanted to reduce the amount of cash they had to pay to a PAE, so they transferred some patents as part of the settlement).

In other instances, the patents passed through the hands of more than one entity before ending up in the hands of a PAE. Regardless of how the PAE obtained the assets, those in the community receive a free license, but those not in LOT may be at risk of being sued.

³ LOT Agreement version 2.0, 05.10.18

LOT NETWORK TODAY

LOT Network has grown its membership to over 1,800 members (November 2021) that are headquartered in 54 different countries. Those members collectively own 3.3 million active patent assets worldwide, which are filed in 86 different countries. LOT Network counts the second, third, fourth and fifth largest patent owners in the world who use their patents to protect their innovations and to protect their business as members of the world's largest community of high-tech companies solving the PAE issue.

LOT Network is simply self-defining a community of companies who are voluntarily deciding, in advance, that they do not want to be the ones who are unlicensed when the assets are transferred to a PAE. Members gain value by sharing their rights in return for other rights which they value. They are not disposing of value or

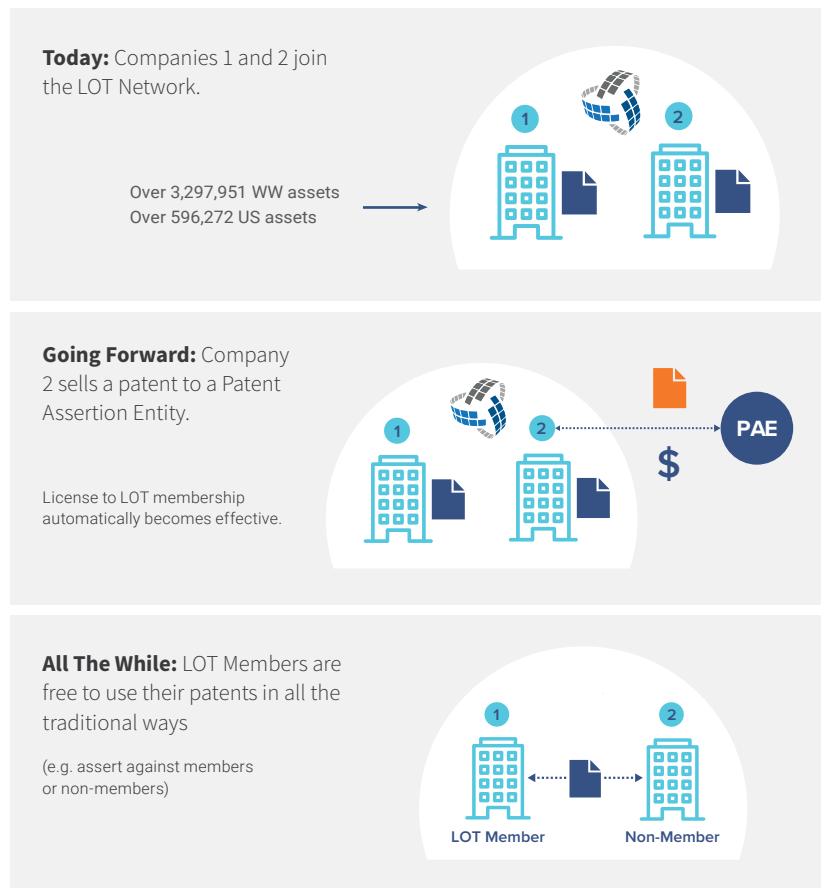
devaluing, but rather gaining value. Ultimately that is why LOT has grown as quickly as it has.

How LOT Network Works

Each member of LOT Network, regardless of their revenue or size of their patent portfolio, signs the exact same document. Under the LOT Agreement, members are committing to give the other members of the community a free license to any patent assets if and when those patents assets are transferred to a PAE as the following diagram illustrates.

The more companies and the more assets that are within the network, the greater the protection afforded to members.

Chart 5: How LOT Works



Innovation is core to the culture at ByteDance, and we believe it's important to protect our diverse technical and creative community...If we work together, we can protect the industry from exploitation and continue advancing innovation, which is key to the growth and success of the entire community.

Lynn Wu, Director and Chief IP Counsel, Global IP and Digital Licensing Strategy at ByteDance

THE LOT NETWORK PORTFOLIO

With its rapid growth in membership, LOT Network has aggregated rights to the largest patent portfolio in the world. There are now over 3,297,951 active worldwide assets subject to the LOT Agreement. This includes all active patents and applications owned by a member during their membership. Patents that have expired or applications that have been abandoned or rejected are not included in this number. In the following sections, the aggregate of these patents and applications are referred to as the LOT Network Portfolio.

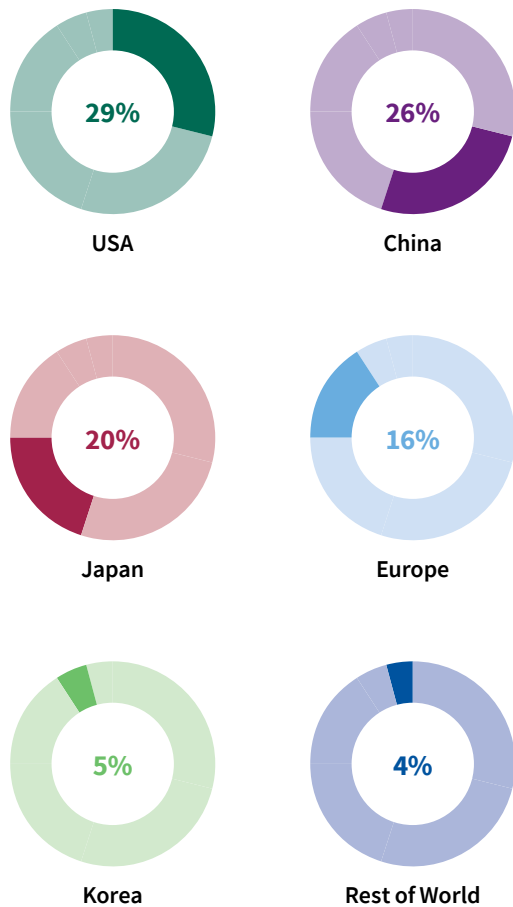
The diversity of LOT Network members means that the LOT Network Portfolio offers protection for all companies, whatever

size they are, the sector in which they operate, or their geographic location. In the sections that follow, Cipher has analysed the LOT Network Portfolio by both sector and technology. We start with an overview.

The LOT Network Portfolio has the greatest coverage in the US, closely followed by China (26%) and Japan (20%).

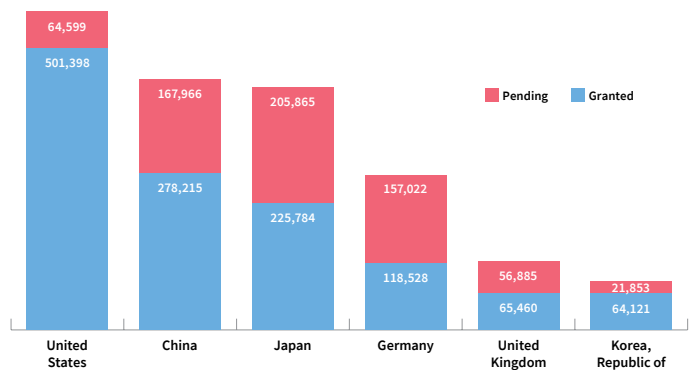
An alternative view is to analyse the LOT Network Portfolio by territory (rather than region), and to analyse patents and applications independently (rather than at family level). This data is contained in Chart 7.

Chart 6: LOT Network Portfolio by geography



Source: Cipher (September 2021)

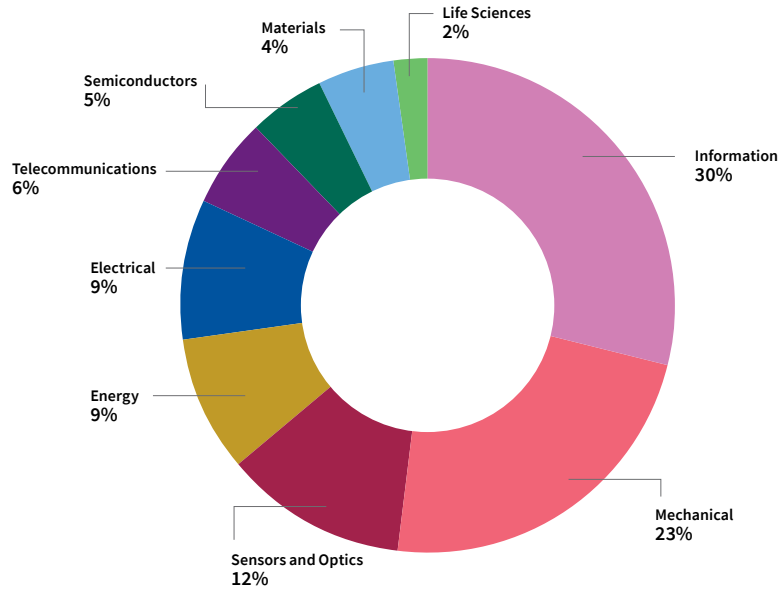
Chart 7: Number of active patents and applications currently owned by country



Source: Cipher, active grants and applications (October 2021)

The LOT Network Portfolio covers a very broad range of technologies, and one way to appreciate this is to analyse the LOT Network Portfolio by the CPC classification system widely used by all major patent offices. Chart 8 represents the top 20 areas within the LOT Network Portfolio. As the LOT Network Portfolio encompasses thousands of CPC codes, it may be difficult for a company to fully appreciate the value received when joining LOT Network. Using advances in AI and machine learning, Cipher is able to classify the LOT Network Portfolio in an objective and repeatable way.

Chart 8: LOT Network Portfolio - Top 9 Technologies



Source: CIPHER Universal Technology Taxonomy, active families by superclass (October 2021)

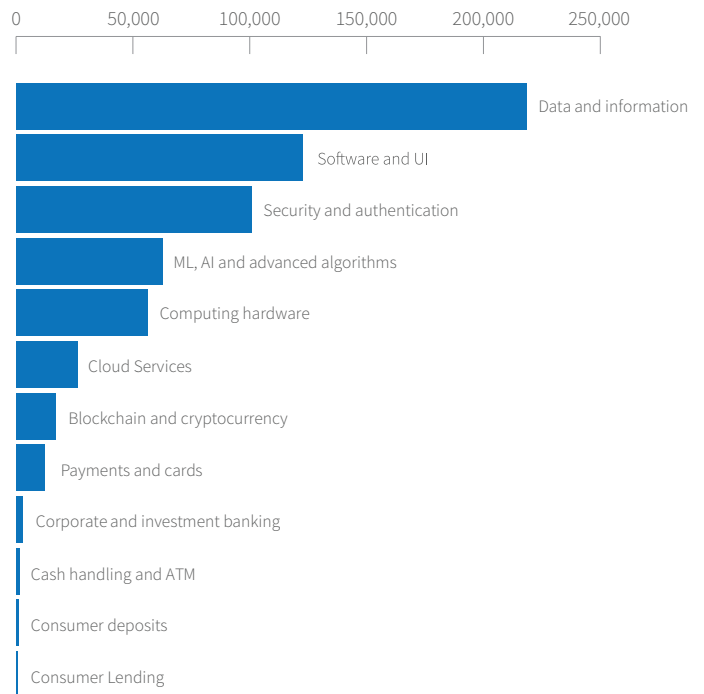
LOT Network Portfolio by Sector

LOT Network members come from a broad range of sectors (see Chart 8), and the LOT Network Portfolio is analysed below by reference to a number of taxonomies developed by CIPHER for companies engaged in the financial services and semiconductor industries.

Financial Services

LOT Network's membership includes 9 of the 10 the largest banks in the United States, including the largest J.P. Morgan Chase, along with all four major credit card companies, 14 members of The Clearing House, bitcoin exchange leaders like Coinbase, digital payments platforms like Ant Financial and Square, ecommerce platforms like eBay, Amazon, and Alibaba, and hundreds of fintech startups. In the aggregate, the companies represent the largest financial services patent portfolio in the world. Chart 9 is a breakdown of the 621,731 patent assets owned by these members.

Chart 9: Breakdown of Financial Services IP owned by LOT Network members



Source: CIPHER FinTech Taxonomy, active grants and applications by overview classifier (September 2021)

Semiconductors

With large and diverse patent holders like IBM, Bayer, DOW Chemical, Boeing, Verizon, Bosch, Canon, the LOT Network Portfolio includes assets in essentially all technology areas. One area that has drawn attention in purchasing from PAEs is semiconductors. Chart 9 illustrates the number of semiconductor assets LOT Network members own by sub-class. Year over year, LOT Network has grown by over 235% just in the number of semiconductor assets under license alone.

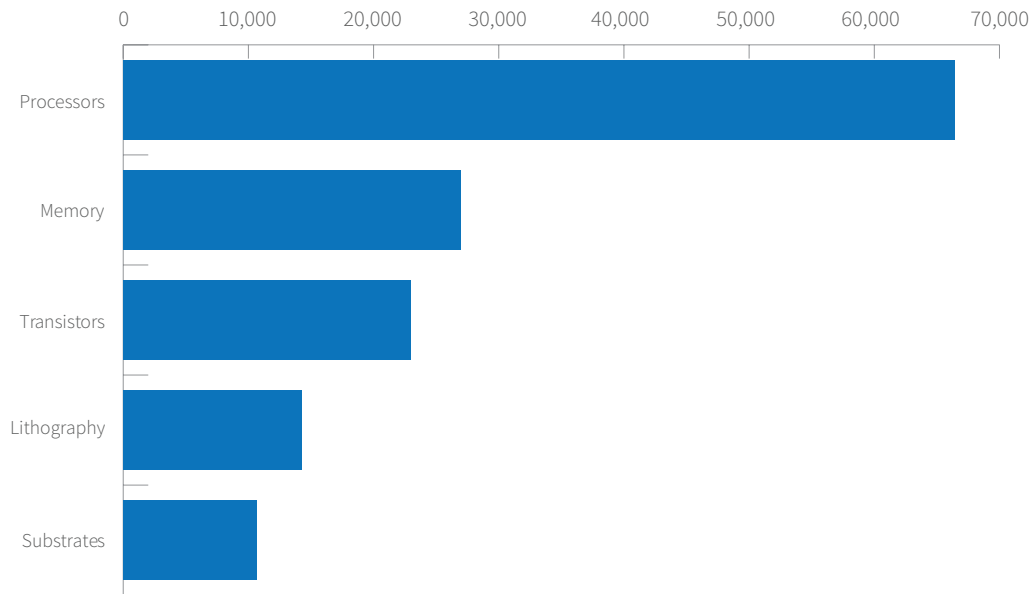


We are working with the world's best automotive companies to make the future of autonomy a reality. As a result, innovation is at the core of Baraja, and any disruptions to our research and development efforts is a significant step backwards. LOT Network is a cost-effective way to protect our business from the upheaval that ensues from PAE litigation."

Federico Collarte

Founder and CEO of Baraja

Chart 10: Semiconductors



Live applications and granted patents by organisation and technology.

Source: Cipher Universal Technology Taxonomy, active grants and applications in the Semiconductor subclasses (October 2021)

WHAT DOES THE FUTURE HOLD?

PAEs have been part of the IP landscape for over 30 years. Given the hundreds of millions of dollars being invested to acquire assets, or being invested through litigation finance, it is clear PAEs are here to stay. Fortunately, there is now a proven solution to address this problem.

As LOT Network continues to grow, we can further strengthen the impact of the immunization it provides, and the value of being part of the community. In addition to the immunization benefit, LOT Network members are also fortunate in that they may be able to purchase a license to some of the patents acquired by AST to help further reduce the risk of attacks from PAEs.⁴

Since operating companies are the primary cause of the PAE issue, LOT Network provides a solution for companies to solve this problem on their terms and conditions. Fortunately, many in the industry have stepped up to join and become part of the solution. Hopefully, the others will follow, because as each new member joins LOT Network's community, the pool of companies that can be sued by a PAE using a LOT Network Portfolio patent shrinks. Thus, for those without a license, the risk that they may be sued grows.



“

To retain our competitive advantage, we need to be able to protect our ability to innovate, and our patents...By joining LOT Network, we have an additional layer of protection against the potential threats of costly patent troll litigation, which is good news for us and for our roster of clients who rely on our world-class products and services.”

Ismat Levin, Senior Vice President and General Counsel, Synamedia

⁴ www.iam-media.com/defensive-aggregation/lot-and-ast-announce-new-deal-making-relationship

PRESS COVERAGE

LOT Network has been mentioned thousands of times in the press; here is a sampling of our coverage.

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Investing News Network, [Metamaterial Acquires Assets and IP of Swiss Lens Manufacturer Interglass](#)

BusinessWorld, [Protecting innovation from patent trolls](#)

Startups Magazine, [IOT NETWORK WELCOMES SPACE STARTUP TO ITS INTERNATIONAL COMMUNITY](#)

Patent Lawyer Magazine, [LiDAR Innovator Baraja Joins LOT Network in a Defensive Measure to Protect its Innovation and Intellectual Property](#)

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WFMZ, [CobbleStone Announces Membership With LOT Network for PAE Protection](#)

The Journal Pioneer, [ROGER TAYLOR: Metamaterial’s eyewear plans bolstered by acquisitions from liquidating Swiss company](#)

PR Newswire – [Canada, Metamaterial Acquires Assets and IP of Swiss Lens Manufacturer Interglass](#)



Cipher is the leading strategic patent intelligence platform, and a member of LOT Network. Cipher maintains the master list of all patents owned by members and captured by the LOT umbrella. All data in this report is generated by Cipher and accurate as of November 2021, unless otherwise indicated. The sector and technology classification is generated from Industry and Technology classifiers developed for and used by many of the leading patent owners in their sectors. All charts in this report may be reproduced with the following attribution: Source: Cipher from LOT Network Report 2021, November 2021. For more information, go to www.cipher.ai or email info@cipher.ai.



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LOT Network is an international community of the world's leading high-tech companies committed to protecting its members from costly litigation from patent assertion entities (PAEs). LOT Network currently protects more than 1,800+ members in 54 countries from litigation from over 3.3 million worldwide patent assets and counting. Members include market leaders such as IBM, Red Hat, Toyota, Visa, Canon, Google, Tesla, Cisco, Amazon, Microsoft, Alibaba and Salesforce, as well as innovative companies across industries. Visit www.lotnet.com to learn more or download LOT Network's agreement.