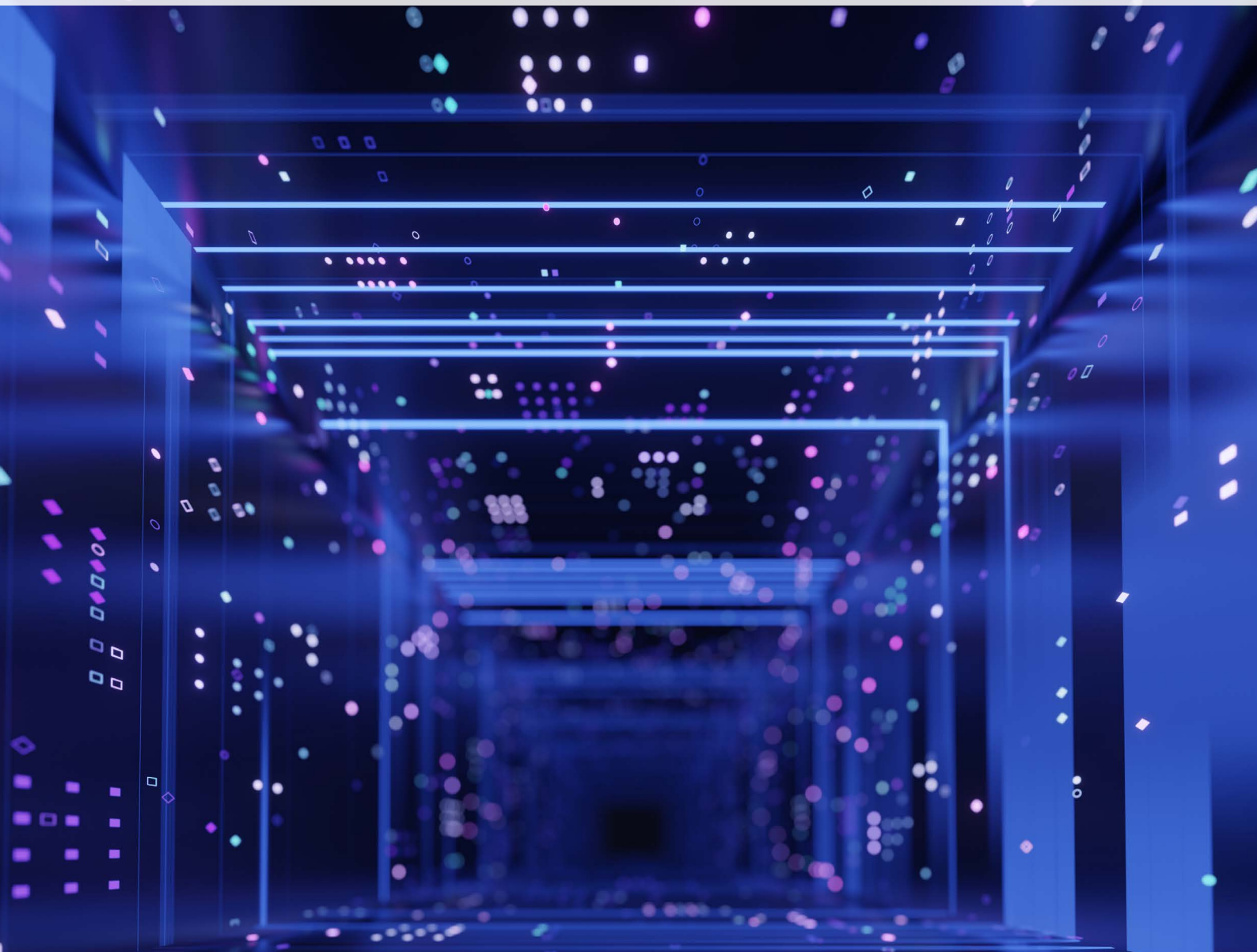




Innovation Momentum 2024: The Global Top 100

Intellectual Property Report



Foreword

In the dynamic landscape of modern business, intellectual property (IP) stands as a linchpin, weaving innovation and strategy into the fabric of organizational success. The traditional IP department, once confined to legalities and protection, now extends far beyond safeguarding innovations, actively shaping the trajectory of business endeavors.



“Innovation Momentum 2024: The Global Top 100,” in its third annual edition, offers a unique perspective on innovation by analyzing patent data to identify organizations that have demonstrated exceptional momentum in the past two years. Unlike other reports that focus solely on patent volume, the LexisNexis approach evaluates patents based on their strength, providing valuable insights into the innovation landscape and emphasizing the importance of quality-driven portfolio strategies in today’s competitive market.

Our analysis of the Top 100 reveals intriguing trends and collaborations among key players, offering a glimpse into the innovations driving various industries forward. This year’s list prominently features companies at the forefront of artificial intelligence (AI) development, a topic of considerable interest and debate within the IP community, particularly regarding AI’s potential role as an inventor. Additionally, we explore the implications of recent mergers and acquisitions (M&A) activities involving select list members, shedding light on evolving industry dynamics.

Noteworthy additions to this year’s Top 100 include industry giants like **Tesla** and **IBM**, representing diverse sectors ranging from electric transportation to advanced computing. Their inclusion underscores a strategic shift toward quality-driven portfolio management.

In an era where information is currency, IP is the essence of progress and there is urgency for IP players to bolster themselves with insightful data and measured foresight. Not only does this report shed light on the top innovators, but it can also serve as a guide, underscoring the need for intellectual property practitioners to be well-equipped for strategic conversations that extend into the boardroom.

Marco Richter

Global Head of Customer Success
LexisNexis® Intellectual Property Solutions

In an era where information is currency, intellectual property is the essence of progress.

Executive Summary

The “Innovation Momentum 2024: The Global Top 100” report employs a unique methodology, utilizing patent data to assess innovation dynamics, differentiating between small, high-quality portfolios and well-maintained large portfolios.

Key Insights



New Entrants: The report introduces 20 new entrants to the list, including notable newcomers like German company **ZEISS**, provider of virtual reality (VR) glasses for the new **Apple Vision Pro™**, and Japan-headquartered **Daikin**, which has put an emphasis on sustainability in their Heating, Ventilation, Air Conditioning & Refrigeration (HVAC&R) innovations.



Strategic Significance of Intellectual Property: The report acknowledges the strategic significance of intellectual property, exemplified by companies like **IBM**, which has transitioned to a value-driven approach in managing its patent portfolio.



Qualitative Patent Strategies: Key companies such as **CATL**, **Tempus Labs**, and **STMicroelectronics** are identified for their innovative patent strategies, showcasing their unique approaches.



AI Innovation Landscape: The report touches on the AI innovation landscape, showcasing companies like **Nvidia** and **Juniper** at the forefront of AI development.



Global Distribution of Innovators: The report sheds light on the global distribution of innovators, with the U.S. excelling in Pharmaceuticals and Information Technology, while Asia dominates in Electronics and Semiconductors.



Advancements in Autonomous Driving: Companies like **Aptiv** and **Tesla** are highlighted for their focused efforts in autonomous driving and autonomous vehicle technologies.



Role of Smaller Portfolios: Companies like **Mirati Therapeutics** and **Splunk** are recognized for their agility and niche expertise, which made them attractive M&A targets for **Bristol-Meyers Squibb** and **Cisco**, respectively.



Academic Focus Areas: Academia's focus on health care and chemistry is highlighted, with significant patent holdings in these areas by organizations like **Broad Institute** and **Mass General Brigham**, along with the rising importance of data analytics and AI in academic (IT) research.

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How to Measure Innovation Momentum

The methodology of the Innovation Momentum report stands at the forefront of examining technology development dynamics. Uniquely attuned to recognize patent owners regardless of their portfolio size, the methodology differentiates between small, high-quality portfolios and well-maintained large portfolios. It comprehensively evaluates advancements across diverse technology fields, accounting for the innovators' target markets. Rooted in the industry-trusted Patent Asset Index,¹ a scientifically rigorous indicator of patent portfolio strength, the methodology provides an impartial means of identifying innovators who have excelled in the past two years.

The evaluation hinges on the average Technology Relevance of patent portfolios, showcasing their potential to drive further inventions. For smaller portfolios, significant increases are required, while large portfolios must either expand in size while maintaining or increasing average patent quality or enhance quality while reducing portfolio size. The assessment also considers the average Market Coverage, reflecting the number of markets in which a patent family is protected. The unification of these indicators yields the average Competitive Impact, representing the average quality of an entire patent portfolio.

In Figure 1, a bubble chart visualizes the quality (y-axis) and quantity (x-axis) of patent portfolios. Each bubble, representing one of the Top 100 patent owners, indicates portfolio strength measured by the Patent Asset Index.

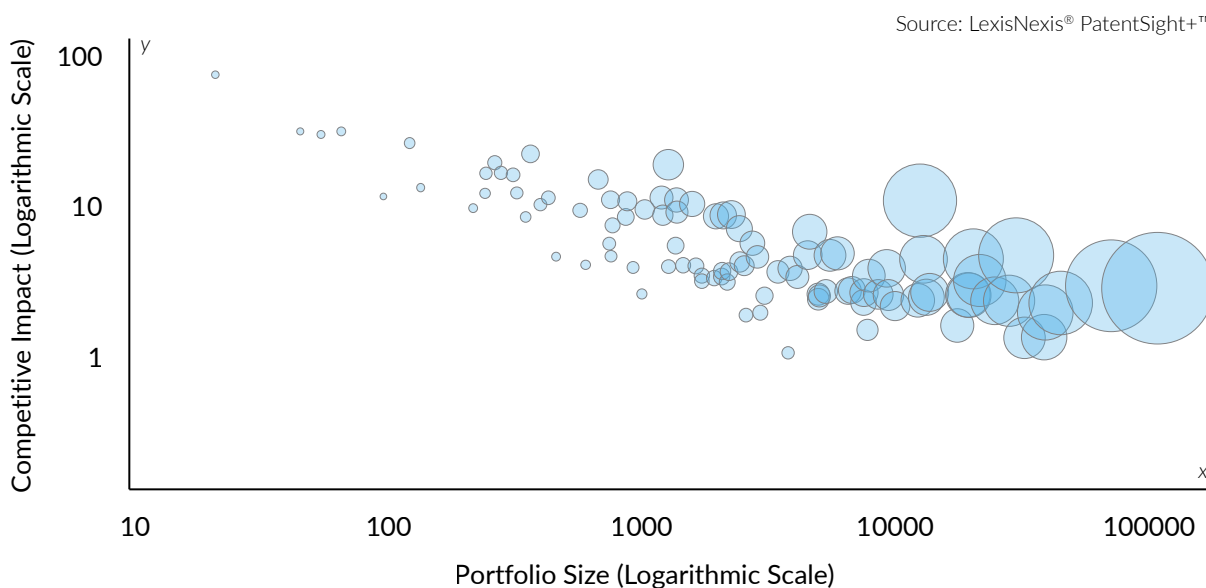


Figure 1: Average patent quality (Competitive Impact) versus Portfolio Size of patent owners in the Top 100. The bubble size of the patent owners represents the portfolio strength (Patent Asset Index).

When it comes to innovation impact, there's typically an interesting trend: bigger players have a lower Competitive Impact, while smaller players tend to show a higher Competitive Impact. This highlights a key point: for larger companies, it takes a lot of highly innovative patents to make a significant impact across their whole portfolio. On the other hand, smaller players can make a substantial impact with fewer, exceptionally innovative patents. It's all about the balance between innovation quality and quantity and understanding how different companies navigate this landscape.

¹Ernst, H., Omland, N. (2011): The Patent Asset Index - A New Approach to Benchmark Patent Portfolios. World Patent Information 33, pp. 34-41.

The 2024 Global Top 100

The Top 100 in alphabetical order, the headquarter location and its industry sector.

Patent Owner	HQ	Industry
10x Genomics	US	Biotechnologies
Acuitas Therapeutics [†]	CA	Pharmaceuticals
AGC	JP	Chemicals and Materials
Align Technology	US	Medical Technologies
Alphabet	US	Information Technologies
Amazon	US	Information Technologies
Amgen	US	Pharmaceuticals
Apple	US	Electronics
Applied Materials	US	Semiconductors
Aptiv*	IE	Automotive
ARAMCO	SA	Chemicals and Materials
ASM	NL	Semiconductors
ASML	NL	Semiconductors
ASUSTeK*	TW	Electronics
Aurora Innovation	US	Automotive
AutoStore	NO	Information Technologies
BASF	DE	Chemicals and Materials
Becton, Dickinson	US	Medical Technologies
BioNTech*	DE	Pharmaceuticals
Boeing	US	Engineering

US: United States, CA: Canada, JP: Japan, IE: Ireland, SA: Saudi Arabia, NL: Netherlands, TW: Taiwan, NO: Norway, DE: Germany

*New to the Top 100 † Re-entered the Top 100

Acuitas Therapeutics

A private biotechnology company based in Canada specializing in the development of delivery systems for nucleic acid therapeutics based on lipid nanoparticles.

Aptiv

An Irish American automotive technology supplier that develops safer, greener and more connected solutions enabling a more sustainable future of mobility.

ASUSTeK

A Taiwanese multinational company known for motherboards and high-quality personal computers, monitors, graphics cards, routers and other technology solutions.

BioNTech

A Germany-based biotechnology immunotherapy company pioneering novel therapies for cancer and other diseases.

The 2024 Global Top 100

The Top 100 in alphabetical order, the headquarter location and its industry sector.

Patent Owner	HQ	Industry
Bristol-Myers Squibb	US	Pharmaceuticals
British American Tobacco	GB	Consumer Goods
CATL	CN	Chemicals and Materials
CJ Corporation	KR	Consumer Goods
Comcast	US	Information Technologies
CureVac	DE	Pharmaceuticals
Daikin*	JP	Appliances
Deere & Co	US	Engineering
DSM-Firmenich	CH	Chemicals and Materials
Edwards Lifesciences	US	Medical Technologies
Eli Lilly	US	Pharmaceuticals
Ericsson	SE	Information Technologies
Gilead Sciences	US	Pharmaceuticals
Hai Robotics*	CN	Engineering
Huawei	CN	Information Technologies
Hyundai Motor	KR	Automotive
IBM*	US	Information Technologies
Illumina	US	Biotechnologies
Incyte	US	Pharmaceuticals
Infineon	DE	Semiconductors

US: United States, GB: Great Britain, CN: China, KR: South Korea, DE: Germany, JP: Japan, CH: Switzerland, SE: Sweden

*New to the Top 100 † Re-entered the Top 100

Daikin

A Japan-based company focusing on HVAC&R, fluorochemicals and filters to advance the health and comfort of people and spaces.

Hai Robotics

A Chinese company that develops Autonomous Case-handling Robot (ACR) Systems and provides warehouse automation solutions through robotics technology and AI algorithms.

IBM

A U.S. technology company that specializes in producing and selling computer hardware, middleware and software.

The 2024 Global Top 100

The Top 100 in alphabetical order, the headquarter location and its industry sector.

Patent Owner	HQ	Industry
Intel	US	Semiconductors
Intellia Therapeutics*	US	Pharmaceuticals
InterDigital	US	Technology R&D
Intuitive Surgical	US	Medical Technologies
Japan Tobacco	JP	Consumer Goods
Jiangsu Hengrui Pharmaceuticals*	CN	Pharmaceuticals
Johnson & Johnson	US	Pharmaceuticals
Juniper Networks*	US	Information Technologies
Kia	KR	Automotive
KLA†	US	Semiconductors
Korea Tobacco & Ginseng	KR	Consumer Goods
Lam Research	US	Semiconductors
LG Chem	KR	Chemicals and Materials
LG Electronics	KR	Electronics
Lumus*	IL	Electronics
Macronix	TW	Semiconductors
Magic Leap	US	Electronics
Masimo	US	Medical Technologies
MediaTek	TW	Semiconductors
Medtronic	IE	Medical Technologies

US: United States, JP: Japan, CN: China, KR: South Korea, IL: Israel, TW: Taiwan, IE: Ireland

*New to the Top 100 † Re-entered the Top 100

Intellia Therapeutics

A U.S.-headquartered company that focuses on pursuing the development of novel, potentially curative therapeutics utilizing CRISPR-Cas9-based technologies.

Jiangsu Hengrui Pharmaceuticals

A China-based pharmaceutical company engaged in the development and commercialization of innovative and high-quality drugs, including oncology and surgical drugs, as well as interventional imaging solutions in China.

Juniper Networks

A U.S.-based networking and cybersecurity solutions company focused on AI networking, cloud and connected security solutions.

KLA

A U.S.-based company that develops and manufactures equipment and services for process control using advanced inspection tools, metrology systems and computational analytics.

Lumus

An Israeli company that creates transparent displays for smart eyewear and head-mounted displays that transform the way people interact with reality.

The 2024 Global Top 100

The Top 100 in alphabetical order, the headquarter location and its industry sector.

Patent Owner	HQ	Industry
Meta	US	Information Technologies
Mirati Therapeutics*	US	Pharmaceuticals
Moderna Therapeutics	US	Pharmaceuticals
Murata Manufacturing	JP	Electronics
Nike	US	Consumer Goods
Novartis	CH	Pharmaceuticals
Nvidia	US	Semiconductors
Ocado	GB	Information Technologies
Ofinno	US	Technology R&D
OMV†	AT	Chemicals and Materials
Procter & Gamble	US	Consumer Goods
Pfizer	US	Pharmaceuticals
Philip Morris	US	Consumer Goods
Pure Storage*	US	Electronics
Qualcomm	US	Semiconductors
Regeneron	US	Pharmaceuticals
ResMed	US	Medical Technologies
Revolution Medicines	US	Pharmaceuticals
Rockwell Automation*	US	Engineering
Saint-Gobain*	FR	Chemicals and Materials

US: United States, JP: Japan, CH: Switzerland, GB: Great Britain, AT: Austria, FR: France

*New to the Top 100 † Re-entered the Top 100

Mirati Therapeutics

A U.S. biotechnology company that designs and delivers therapies focused on lung cancer and therapeutics targeting the genetic and immunological drivers of cancer.

OMV

An Austria-headquartered company that provides advanced and circular polyolefin solutions, including base chemicals, fertilizers and plastics recycling.

Pure Storage

A U.S.-based technology company that provides enterprise-grade, all-flash block, file and object storage.

Rockwell Automation

A U.S.-based provider of industrial automation and digital transformation technologies. Brands include Allen-Bradley, FactoryTalk software and Lifecycle IQ Services.

Saint-Gobain

A French company that designs, manufactures and distributes materials and services for the construction and industrial markets.

The 2024 Global Top 100

The Top 100 in alphabetical order, the headquarter location and its industry sector.

Patent Owner	HQ	Industry
Salesforce	US	Information Technologies
Samsung	KR	Electronics
Samsung SDI	KR	Chemicals and Materials
Sanofi	FR	Pharmaceuticals
Smoore*	CN	Consumer Goods
Snap	US	Information Technologies
Splunk	US	Information Technologies
STMicroelectronics*	CH	Semiconductors
Stryker	US	Medical Technologies
Techtronic	HK	Appliances
Tempus Labs*	US	Pharmaceuticals
Tencent	CN	Information Technologies
Tesla*	US	Automotive
Tokyo Electron	JP	Semiconductors
TRUMPF†	DE	Engineering
TSMC	TW	Semiconductors
Välinge Innovation	SE	Chemicals and Materials
Vertex Pharma*	US	Pharmaceuticals
Yantai Jereh Oilfield Services	CN	Chemicals and Materials
ZEISS*	DE	Semiconductors

US: United States, KR: South Korea, FR: France, CN: China, CH: Switzerland, HK: Hong Kong, JP: Japan, DE: Germany, TW: Taiwan, SE: Sweden

*New to the Top 100 † Re-entered the Top 100

Smoore

A Chinese company focused on atomization technology solutions, including medical, pharmaceutical, and beauty atomization technologies.

STMicroelectronics

A Swiss technology company creating semiconductor technologies.

Tempus Labs

A U.S.-based company building tech solutions oriented around clinical care and research products, bringing data and AI to health care.

Tesla

A U.S.-based automotive and energy company that designs, develops, manufactures, sells, and leases electric vehicles, energy generation, and storage systems.

TRUMPF

A German company that provides manufacturing solutions in the fields of machine tools, laser technology, electronics and industry.

Vertex Pharma

A U.S.-based company that invests in scientific innovation to create transformative medicines for people with serious diseases.

ZEISS

A German technology enterprise operating in the optics and optoelectronics industries with segments in semiconductor manufacturing technology and more.

Redefining Patent Strategies: Insights From Top 100

Measuring innovation momentum prompts the question: what patent management strategies propel companies into the Top 100? Innovation Momentum builds on the difference between expected and real developments within a patent portfolio, reflecting changes in size and Technology Relevance. Considering the Portfolio Size, portfolios can be divided into mature larger portfolios, evolving midsize portfolios and dynamic small portfolios.

Source: LexisNexis® PatentSight+™

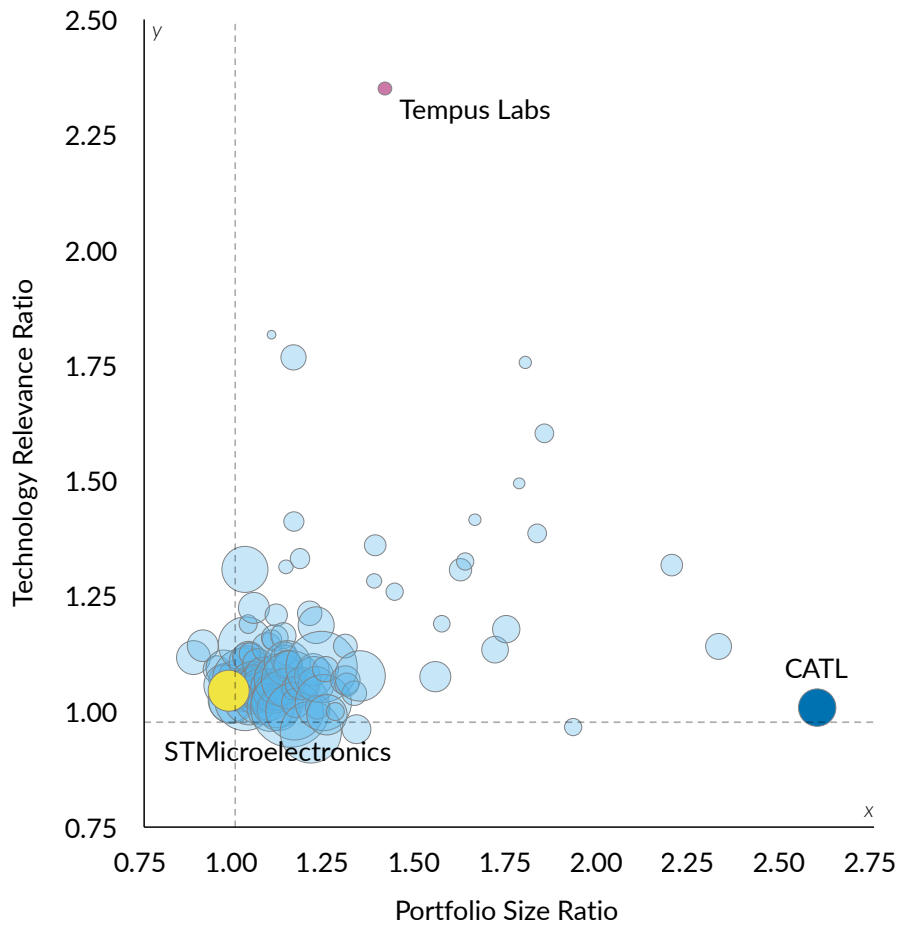


Figure 2: The changes in Portfolio Size and Technology Relevance of the Top 100 companies over the past two years.

Figure 2 illustrates the changes in Portfolio Size and Technology Relevance of the Top 100 companies. The x-axis represents the ratio of current Portfolio Size to that of two years ago, with a ratio of 1 indicating no change and more than 1 representing that it grew. The y-axis shows the ratio of Technology Relevance, with values above 1 indicating increased relevance. Bubble size denotes current Portfolio Size.

Most Top 100 companies exhibit growth in both Portfolio Size and Technology Relevance. Most large portfolios with tens of thousands of patents have ratios close to one because it would require significant changes to move entire portfolios. However, these companies are placed among the Top 100 because they beat the general trend of decreasing Technology Relevance with increasing Portfolio Size.

For example, **CATL**, a prominent Chinese battery manufacturer with a midsize to large-size portfolio, has increased its Portfolio Size by 2.5 times to more than 6,000 patents today and simultaneously was able to elevate its Technology Relevance. This strategic increase is in line with the surge in innovation in electric vehicles (EVs) and large-scale energy storage systems. **CATL's** approach illustrates how a deliberate augmentation in relevant patents can propel a company to the forefront of innovation.

Tempus Labs, on the other hand, operates within the niche of AI-driven medical diagnostics, and while it has a comparatively smaller portfolio of approximately 100 active patent families, its rise in Technology Relevance of almost 2.5 times reflects its advancements in medical data processing and solidifies their presence in the 2024 Top 100.

The management of mid and large portfolios includes balancing a company's IP protection and the associated costs without deteriorating a portfolio's strength and value. **STMicroelectronics**, a European integrated semiconductor device manufacturer, among a few others has adopted this different yet equally effective strategy. By maintaining a consistent Portfolio Size and strategically divesting itself of lower-value patents over the past decade, the company has significantly improved its Technology Relevance. This approach showcases the potential of a refined IP strategy to enhance business value and maintain a competitive edge.

“Small (in comparison) but mighty! We focus on quality over quantity when it comes to creating and protecting innovation. We are thrilled that our efforts to create an impactful IP portfolio in our industry and adjacent industries have been validated by LexisNexis. IP creation tends to be well in advance of industry inflections, and by analyzing patents, we can identify emerging trends early despite patents generally being a lagging indicator.”

Ryan Liebengood
Corporate Director
IP & Licensing, ASM

The Industries of the 2024 Top 100 Companies

The Top 100 companies provide insights into industry distribution, seen in Figure 3, and its impact on the global innovation landscape. Pharmaceuticals maintains its strong position at the top of the industry list, increasing from 18 to 20 patent owners from 2023 to 2024. A notable trend for the Pharmaceutical industry, and what can contribute to their continued innovation momentum representation, is a focus on acquiring startups rather than relying solely on in-house innovation, leading to a landscape populated by more nimble players, including new list entrants like **Acuitas Therapeutics**, **Tempus Labs** and **BioNTech**.

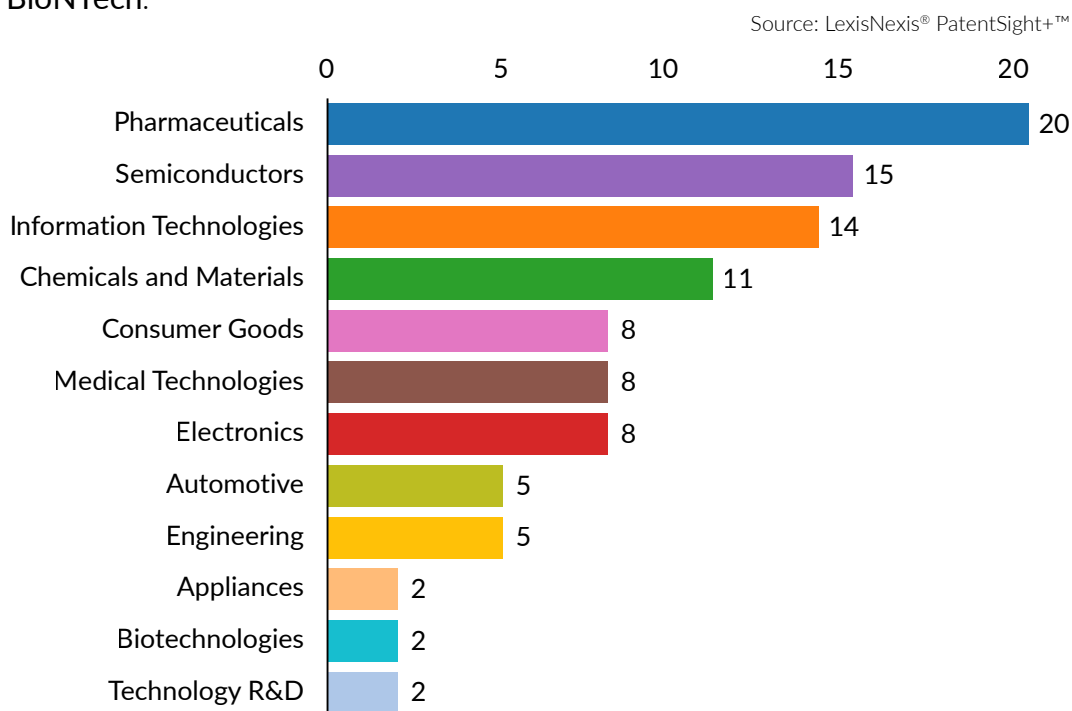


Figure 3: The number of Top 100 innovators per industry sector.

The Semiconductors industry also experienced growth, rising from 12 to 15 companies from 2023 to 2024, with companies like **ASML**, **Intel**, **Qualcomm**, and **TSMC** contributing significantly not only to electronics but also to advancements in automotive, medical technologies, and beyond. In contrast to Pharmaceuticals, the Semiconductors sector typically comprises larger organizations, leveraging scale to compete on price.

“CureVac has been at the forefront of innovation in mRNA technology for more than two decades, a testament to the outstanding scientific prowess of our team. Our intellectual property portfolio continues to grow, with its high quality and relevance leading the way in the advancement of the entire RNA field.”

Dr. Alexander Zehnder
 Chief Executive Officer
 CureVac

Tech giants, including **Alphabet**, **Amazon**, and **Apple**, representing the U.S. as an Information Technologies hub, also extend their influence into biotechnologies, medical technologies, and consumer goods, showcasing their multifaceted role in innovation. **IBM**, appearing on the list for the first time, announced in 2022 that they were shifting to a more focused patent strategy, most likely playing a role in their momentum this year.

Diverse consumer goods companies like **Nike**, **Proctor & Gamble**, **British American Tobacco**, and **CJ Corporation** highlight the role of innovation in everyday products with a blend of technology, materials, and design advancements.

Automotive and engineering innovations, demonstrated by companies like **Boeing**, **Hyundai Motor**, and new list entrants **Aptiv**, **TRUMPF**, and **Tesla**, continue to drive progress in the evolution of mobility solutions. **Aptiv** and **Tesla** have both been focusing efforts on autonomous driving and autonomous vehicle technologies. **Tesla** has increased its patent portfolio size by almost 14% within the last year while maintaining high quality and is strongly cited by players like **Hyundai Motor** and Toyota.

Though only two Biotechnologies companies appear on the list, **10x Genomics** shows one of the highest patent portfolio quality among the Top 100, innovating rapidly and increasing its innovation momentum by 50% since last year.

"Competition in augmented reality optics is rising steeply through specialized players and dedicated innovation teams within tier-one companies. Lumus' patent portfolio reflects our razor-sharp focused strategy and long-term persistence. The Innovation Momentum methodology rewards these behaviors, allowing Lumus to succeed among giants."

Mike Adel

Vice President, Intellectual Property
Lumus



Innovation in the World's Regions

The global innovation landscape exhibits a diverse array of advancements that reflect the unique strengths and strategic focuses of different regions. Today, there is a significant interplay between traditional industrial strengths such as pharmaceuticals and emerging technological frontiers like AI, with various parts of the world becoming hotspots for specific types of innovation, as seen in Table 1.

Source: LexisNexis® PatentSight+™

Industry Sector	Americas	Asia	EMEA	Total
Pharmaceuticals	15	1	4	20
Semiconductors	6	4	5	15
Information Technologies	9	2	3	14
Chemicals and Materials	0	5	6	11
Consumer Goods	3	4	1	8
Medical Technologies	7	0	1	8
Electronics	3	4	1	8
Automotive	2	2	1	5
Engineering	3	1	1	5
Appliances	0	2	0	2
Biotechnologies	2	0	0	2
Technology R&D	2	0	0	2
Total	52	25	23	100

Table 1: The breakdown of the number of innovators by industry sector and region.

In the pharmaceutical sector, the United States has not only emerged as a global leader but also as a hub of pharmaceutical start-up culture. With 14 companies based in the U.S. featured on the Top 100 list, it builds on its long-standing tradition of excellence in medical research and pharmaceutical development. While start-ups like **Tempus Labs** and **Revolution Medicines** showcase entrepreneurial spirit in this field, veteran company **Johnson & Johnson** continues to spearhead innovations in robotic surgery and surgical tools, pushing the boundaries of health care and treatment. In a post-pandemic world, where the demand for medical breakthroughs and resilient health care systems is at its peak, this focus on health care innovation becomes increasingly crucial.

The United States also has a strong position in Information Technology. This sector, including new list entrants **IBM** and **Juniper Networks**, continues to drive global digital advancements. Recent insights reveal the acquisition of **Juniper Networks** by Hewlett Packard Enterprise (HPE), announced in January 2024, aimed at integrating AI capabilities into HPE's network infrastructure management. This dynamic approach positions the U.S. IT industry not only as a provider of fundamental technologies but also as a catalyst for advancements in artificial intelligence, advanced networking, cloud computing and other transformative technologies that shape the digital landscape for consumers and businesses worldwide.

Samsung, headquartered in South Korea, and **Huawei** from China, both at the forefront of innovation in 5G wireless technology, are each in the Top 100 for the third year in a row, underscoring Asia's pivotal role in the tech industry. The only two Appliances companies on the Top 100 list are also from the Asia region. Japan-based **Daikin**, most notable for their Heating, Ventilation, Air Conditioning & Refrigeration (HVAC&R) innovations, and Hong Kong-based **Techtronic**, focused on power tools, have both put an emphasis on sustainability.

In the field of Semiconductors, list members from the U.S., like **Qualcomm** and **Nvidia**, have also made significant contributions to AI, underlining the country's pivotal role in innovation. Similarly, the EMEA region boasts of influential players such as the Netherlands-based **ASML** and Germany's **Infineon**. The Asian region is represented by giants like Taiwan's **TSMC** and **MediaTek**.

Asia and Europe have the most companies among the Top 100 in Chemicals and Materials. Interestingly, the Top 100 list does not include any players from the United States in this sector and instead highlights companies such as **AGC**, based in Japan, and the newly merged entity **DSM-Firmenich**, based in Switzerland. These industries are crucial for various applications, from green energy solutions to advanced manufacturing technologies. The presence of companies like **ARAMCO**, **Saint-Gobain** and **BASF** among the Top 100 innovators further emphasizes the innovation that promotes industrial progress.



Assessing Potential: Valuation and Patent Data

When it comes to companies emerging as top innovators in their respective space, their role often goes beyond mere product development to become critical in the extensive network of technological advancement and market strategy. They bring expertise, develop proprietary technologies and often outmaneuver larger, less agile companies in responding to market needs. This innovative prowess makes them prime M&A targets. The 2024 roster of top innovators also includes some of these impactful companies that were targets in 2023 and early 2024.

Source: LexisNexis® PatentSight+™

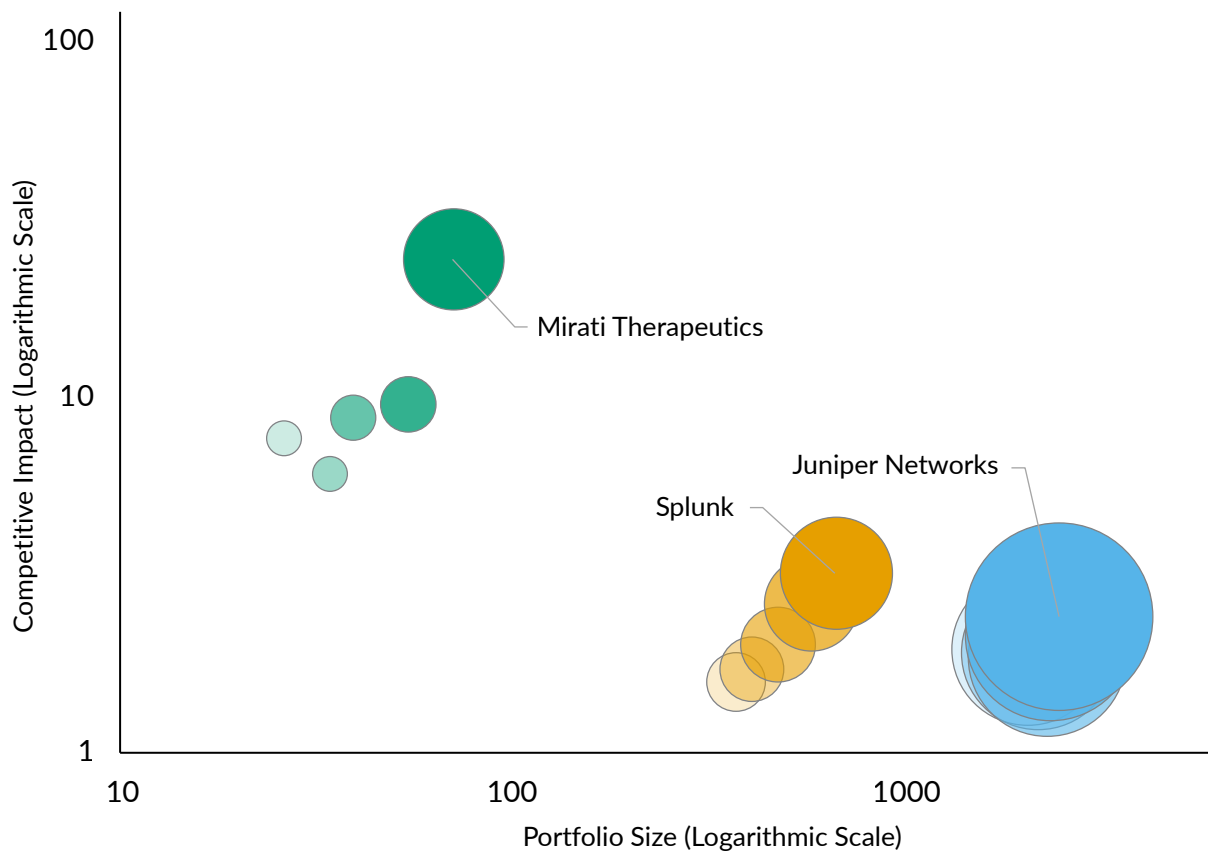


Figure 4: Average patent quality (Competitive Impact) versus Portfolio Size of patent owners with smaller portfolios with specialized technologies. The bubble size of the patent owners represents the portfolio strength (Patent Asset Index). The bubble trail illustrates the portfolio development between 2019 and 2023.

Mirati Therapeutics, for instance, owns a very high-quality portfolio, as indicated by its position in Figure 4, and has been competitive in the oncology therapeutics arena. Their focused research and development efforts have yielded influential patents, propelling them to the forefront of technological development in cancer treatment. Developing a small, focused and high-quality patent portfolio increases their valuation and allure in the eyes of larger pharmaceutical companies looking to expand their therapeutic portfolio and accelerate their growth strategies. As expected, they were acquired by **Bristol-Myers Squibb** in late 2023 due to their potential to alter the competitive landscape significantly.

Another similar company in the Top 100 is **Splunk**, whose expertise in managing and extracting value from vast data troves offers a compelling competitive edge. In today's data-driven world, their ability to capture, index and analyze large datasets is crucial. With a portfolio of patents that they have been consistently building both in size and quality, as seen by their bubble trajectory, the acquisition move by Cisco underscores the strategic importance of data management capabilities and the strength of Splunk's portfolio. This also signals a trend where traditional hardware and networking giants are keen to integrate advanced analytics into their offerings to stay relevant and drive innovation.

Juniper Networks, a key competitor of Cisco is another significant player in the IT space with advancements in networking solutions, marked by its expanding and high-quality patent portfolio. Hewlett Packard Enterprise (HPE) has recognized its consistent focus on AI-driven innovation. It sees value in integrating **Juniper Networks'** robust solutions into its offerings to enhance its competitive stance in the market. In early January this year, HPE announced its planned acquisition of **Juniper Networks** in an all-cash transaction.

Each of these companies showcases how intellectual property development is not just a measure of innovation but a strategic asset that can turn them into a high-value acquisition target. For strategic decision makers at leading large companies, start-ups that own small yet strong IP portfolios signal robust health and success, not only of their innovation teams but also of their overall business potential. In the landscape of M&A, such small yet highly innovative companies offer a combination of agility, advanced technology and market potential that is increasingly appealing to larger entities aiming to consolidate their market positions.



“We have always believed that our growing portfolio stacks up against the best in terms of quality, especially compared to our peers working in the same areas of 5G, Wi-Fi, and media compression. We are thrilled to see this confirmed by the LexisNexis 2024 Innovation Momentum Report.”

Esmael Dinan
Founder and CTO
Ofinno

Academics and Public Research

While the Top 100 features exclusively corporate entities, several academic and public research innovators have also demonstrated exceptional Innovation Momentum, meeting the same criteria, and we acknowledge their contributions here.

A key trend in the academic and public research landscape is the pronounced focus on health care and chemistry among institutes in the U.S. This emphasis reflects the urgent global challenges and opportunities in these fields, ranging from developing new pharmaceuticals and treatments to the advancements in chemical engineering and materials science. The significant patent holdings in these areas by leading universities and research organizations—like the **Broad Institute**, a partnership between Harvard and MIT partnership, and **Mass General Brigham**—underline their commitment to tackling complex health and environmental issues. The **Broad Institute** owns the portfolio with the highest average quality in this category, as indicated by its position on the y-axis of Figure 5.

Source: LexisNexis® PatentSight+™

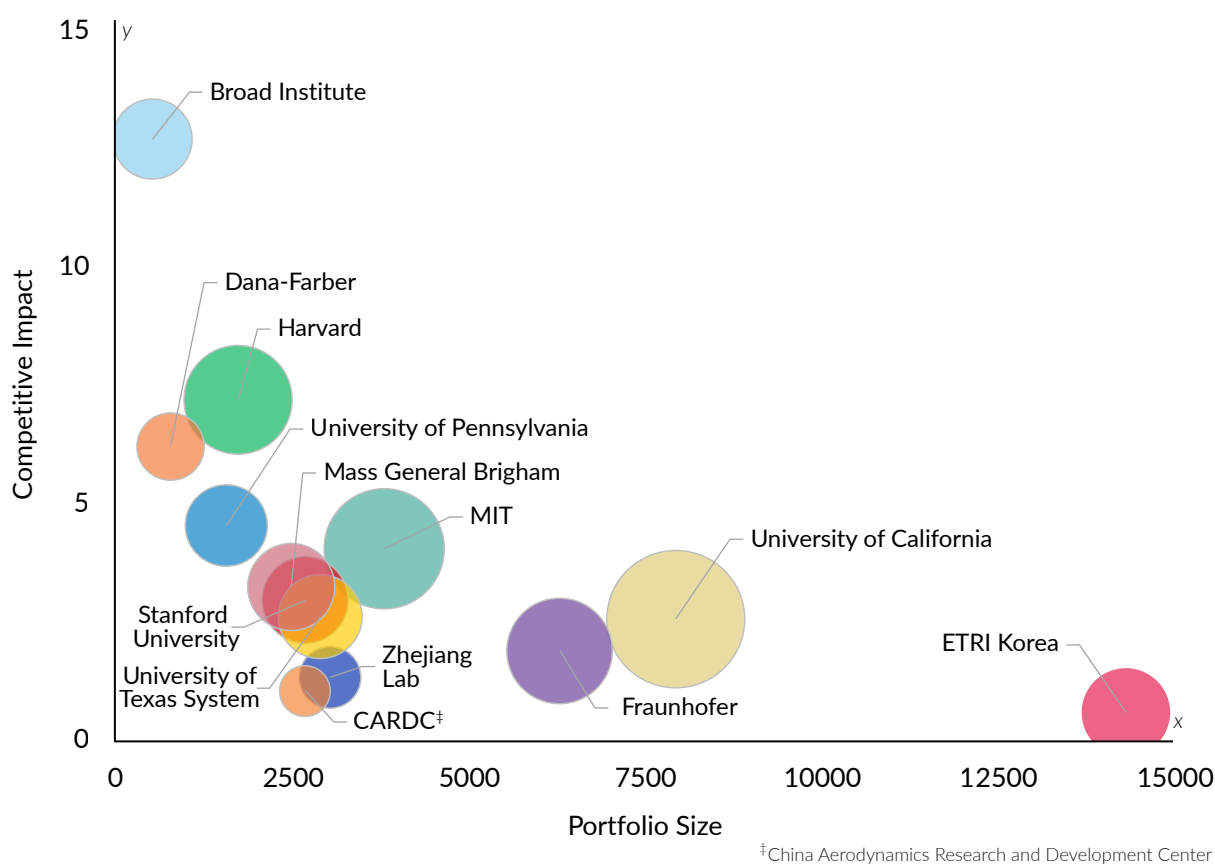


Figure 5: Average patent quality (Competitive Impact) versus Portfolio Size of patent owners in the Academics and Public Research sector. The bubble size of the patent owners represents the portfolio strength (Patent Asset Index).

Information Technology is another research area where academic institutions are making substantial strides, seen in Figure 6. The digital era has necessitated a deep dive into areas like data analytics, cybersecurity and AI, where academic research contributes to theoretical understanding and drives practical applications. Organizations from China like the **China Aerodynamics Research and Development Center (CARDC)** and **Zhejiang Lab** lead the pack in this area, with a considerable portion of their portfolio focusing on technologies in the IT sector. The patents and research coming out of these institutions in IT signify strong engagement with the digital transformation that is reshaping businesses and societies globally.

Source: LexisNexis® PatentSight+™

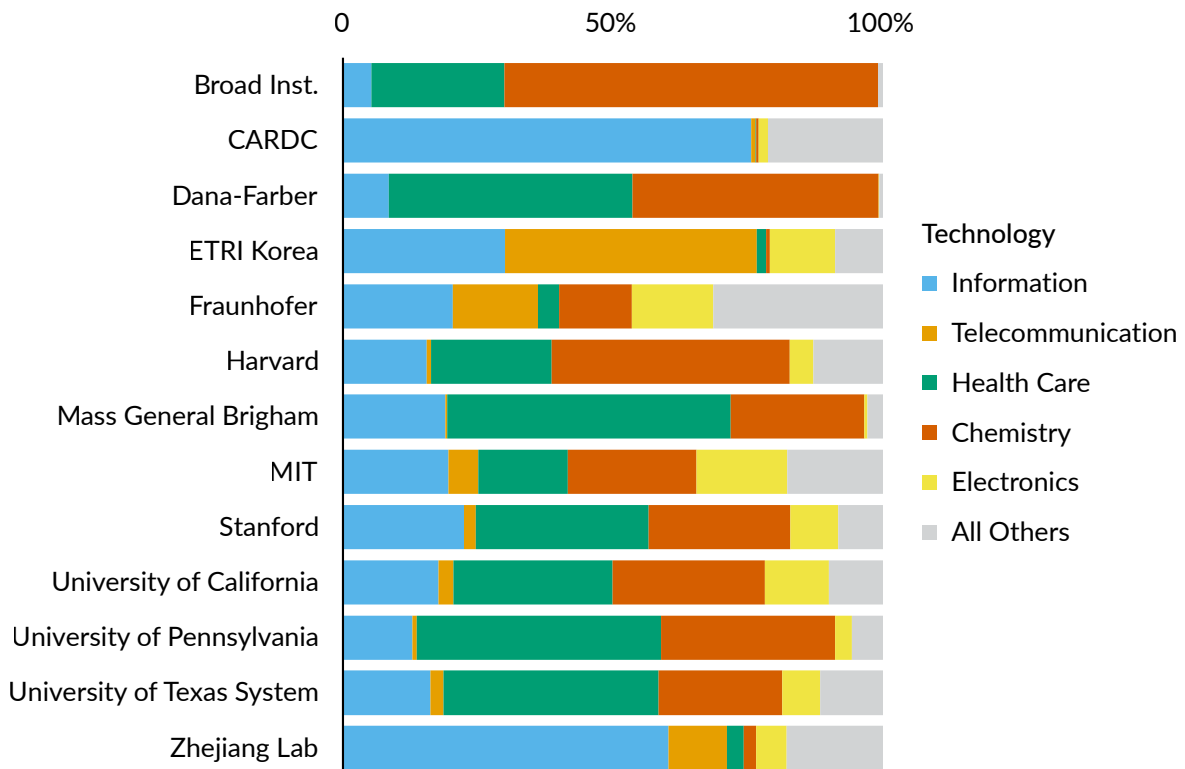


Figure 6: Major technology fields covered by the Academics and Public Research patent owners.

The IT patents and research coming out of academic and public research institutions signify strong engagement with the digital transformation that is reshaping businesses and societies globally.

Closing Summary

“Innovation Momentum 2024: The Global Top 100” paints an inspiring portrait of intellectual property as a key player propelling businesses toward innovation. The report stands out due to its unique perspective, powered by the Patent Asset Index and the Innovation Momentum methodology. By employing qualitative metrics and focusing on recent advancements, it effectively pinpoints genuine innovators. This is evident in companies such as **Mirati Therapeutics**, **Splunk** and **Juniper Networks**, demonstrating that intellectual property development is a strategic asset beyond mere product development, propelling them into high-value acquisition targets.

The same trend is observed in larger, more established players like **IBM**, making its debut on the list. **IBM's** strategic emphasis on quality patents highlights its commitment to innovation and adaptability in the dynamic technological landscape. This entry underscores the company's enduring relevance, leveraging its rich history while remaining at the forefront of cutting-edge advancements.

In this dynamic environment, IP departments are emerging as architects of strategic conversations. As we collectively strive to unlock the full potential of intellectual property, it is a call to action for IP practitioners to be equipped with the nuanced understanding required for strategic dialogues. Patent data serves as a powerful arsenal in the boardroom, providing tangible insights into innovation landscapes, potential threats and competitive advantages. Armed with this information, IP professionals can strategically navigate discussions, contribute informed perspectives, and play a pivotal role in shaping the intellectual property strategy aligned with broader business objectives.

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Dr. Dirk Caspary is a senior consultant with excellent knowledge in the field of patent search, portfolio analysis, and competitive intelligence. He has extensive experience in the analysis and evaluation of patents and patent portfolios, e.g., in the context of patent prosecution, licensing programs, or defense against third-party patent assertions. Dr. Caspary has broad technical knowledge; demonstrates rapid comprehension of complex technologies; and has comprehensive expertise in semiconductor technologies, which he has acquired through many years of consulting work for leading global semiconductor manufacturers, reverse engineering, and his work in the semiconductor industry.

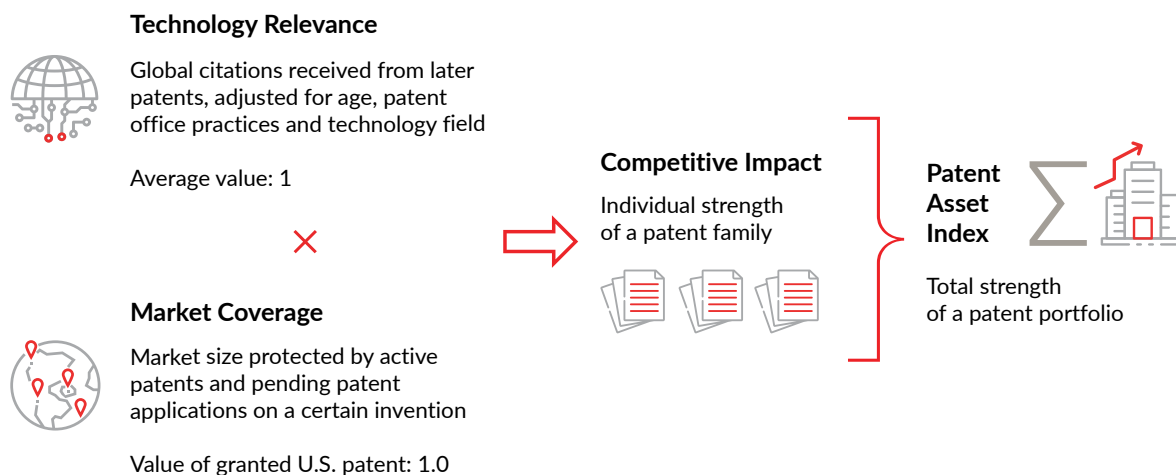


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William Mansfield is the head of consulting and customer success in the Americas and EMEA for LexisNexis® Intellectual Property Solutions. He is responsible for overseeing the negotiation, creation, and delivery of customer consulting, along with managing the Customer Success team. He works closely with numerous international and Fortune 500 companies and others to ensure effective deployment of patent analysis for business strategy, M&A due diligence, portfolio management, and other needs. Mr. Mansfield has an economics background and experience in market and R&D strategy in the solar industry.

About the Patent Asset Index

The Patent Asset Index represents a measure of the innovative strength of a patent portfolio. A patent family is more valuable when other innovations build on the technology protected by this patent family and by the scope of protection that the patent family holder considers appropriate.



Ernst, H., Omland, N. (2011): The Patent Asset Index - A New Approach to Benchmark Patent Portfolios. World Patent Information 33, pp. 34–41.

Technology Relevance is a measure of the importance of a patent family and the technological invention it protects. It is calculated based on the total number of worldwide citations that are received from other patent families and is adjusted for the facts that (1) older patents are cited more often, on average, than younger patents; (2) international patent offices follow different citation rules; and (3) different citation practices are prevalent in different technology fields.

Market Coverage is measured as the size of the markets in which a patent family is protected, as benchmarked against the world’s largest economy—the United States. In this context, the gross national income (GNI) of a country is used as a proxy for the relative size of its national market. Market Coverage is calculated based on granted and pending patents, adjusted for the patent family’s protected market size.

Competitive Impact represents the individual strength of a patent family and is obtained by multiplying the Technology Relevance and the Market Coverage of each patent family. It is stated relative to the other patent families in the same field. For example, a value of three means that the patent family is three times as important as the average patent family in the field. The value obtained by adding up all the Competitive Impact values of all patent families constituting the portfolio is defined as the Patent Asset Index, which measures the overall strength of a patent portfolio.

The Patent Asset Index methodology is based on many years of scientific research and was validated in peer-reviewed academic publications and studies. Our patent analytics platform, LexisNexis® PatentSight+, featuring the Patent Asset Index, has been used for several years by leading companies in many industries, as well as governmental bodies and organizations, e.g., in antitrust consideration or merger clearances. Numerous companies trust the Patent Asset Index to illustrate the strength of their patent portfolios in annual shareholder reports and other stakeholder communications.

About LexisNexis® PatentSight+™

LexisNexis® PatentSight+™ enables core IP activities such as competitive intelligence and benchmarking, portfolio optimization and more, by bringing together highly curated and enriched datasets, cutting-edge analysis tools with streamlined workflows and powerful visualization capabilities, all within a single platform. With PatentSight+™, enhance decision making with extensive data quality and coverage, provide a competitive edge with actionable insights powered by advanced AI-driven analytics, and elevate IP strategies with impactful communication tools.

About LexisNexis® Intellectual Property Solutions

In today's rapidly evolving landscape, IP professionals face the daunting challenge of navigating a complex intellectual property landscape on top of increasing cost pressures. These challenges demand clear, actionable insights to make strategic decisions with confidence.

Our mission is to bring clarity to innovation by providing the IP community with contextualized and evidence-based insights and analytics. We enable strategic decision makers to minimize risk and maximize the value of their IP using highly curated, enriched data sets and powerful solutions that leverage artificial intelligence, natural language processing, and compelling visualizations.

Our broad suite of workflow and analytics solutions (LexisNexis® IP DataDirect, LexisNexis® IPlytics, LexisNexis Cipher, LexisNexis PatentAdvisor®, LexisNexis® PatentOptimizer™, LexisNexis® PatentSight+™ and LexisNexis® TotalPatent One®), enables companies to be more efficient and effective at bringing meaningful innovations to our world. We are proud to directly support and serve these innovators in their endeavors to better humankind.

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Bringing Clarity to Innovation

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