

# Frame the Future IP Systems



# Intellectual Property Systems

## The State of IP Systems Today

Intellectual property (IP) lays the foundation for the innovation economy. It allows artists, scientists, creators, and businesses to commercially benefit from their original work, incentivizing creativity and competitiveness. These creations of the mind, in the forms of inventions, designs, literary and artistic works, symbols, names, and images play a significant cultural and financial role in today's knowledge society. There are vast IP systems designed to protect inventions and cultivate their growth. Effective mechanisms can increase twofold the number of innovation outputs<sup>1</sup> in a given economy and increase by 38 percent a country's potential for venture capital and private equity attraction.

In recent years, technological advancements have added a new emphasis to IP policies and strategies, unleashing new challenges — and opportunities — to support innovation and entrepreneurship. The large-scale adoption of digital technologies allowed the development of new business models and expanded the reach of IP beyond traditional trade sectors, which used to be nearly exclusive to technology and pharma in the past. Intangible assets, in the forms of patents, trademarks, copyrights, brands, research, and software, have become leading resources within government and corporate portfolios. In 2015, IP comprised more than 80 percent of S&P market value, increasing from 68 percent to 84 percent in a decade.<sup>2</sup> The COVID-19 pandemic accelerated this trend, with intangible assets now responsible for 90 percent of all business value worldwide.<sup>3</sup>

That said, in the digital age, IP operates very differently than its original use. Artificial intelligence (AI) is pushing a revolution in the field, raising concerns about future outcomes, and driving significant systemic change. Up until now, AI still existed primarily as a tool to assist human-generated interventions, with the average annual rate of international patents in core AI technologies increasing at 54.6 percent since 2010.<sup>4</sup> But AI-generated creations — when a computer system with decision-making power generates an innovative output without (or with little) human intervention — is starting to become a reality. In 2019, the World Intellectual Property Organization (WIPO) announced two international patents were filed for "AI-generated inventions." In these submissions, AI is listed as the inventor and owner of both patents.

Regulations still need to catch up with these new developments. Most countries today only allow patent filing to disclose an inventor who is a natural person. In 1988, the United Kingdom (UK) updated its legislation to provide copyright protection for "computer-generated" work. Conversely, the United States (U.S.) prohibits the copyright of creations generated by machines.<sup>5</sup> At the international level, the WIPO advocates for patent protection for AI-generated work to fuel innovation and to motivate developers behind it, which would, ultimately, protect the rights of human inventors, according to the organization.

Digital connectivity has also altered the production and consumption of products in the creative economy. Between 2003 and 2015, the annual growth rate of creative goods exports was 7.34 percent globally and imports was 5.1 percent globally.<sup>6</sup> Today, creative industries represent an increasing

1 [https://www.theglobalipcenter.com/wp-content/uploads/2021/03/GIPC\\_IPIndex2021\\_FullReport\\_v3.pdf](https://www.theglobalipcenter.com/wp-content/uploads/2021/03/GIPC_IPIndex2021_FullReport_v3.pdf).

2 <https://www.oceantomo.com/intangible-asset-market-value-study/>.

3 *ibid.*

4 [http://documents.epo.org/projects/babylon/eponet.nsf/0/06E4D8F7A2D6C2E1C125863900517B88/\\$File/patents\\_and\\_the\\_fourth\\_industrial\\_revolution\\_study\\_2020\\_executive\\_summary\\_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/06E4D8F7A2D6C2E1C125863900517B88/$File/patents_and_the_fourth_industrial_revolution_study_2020_executive_summary_en.pdf).

5 [https://www.wipo.int/wipo\\_magazine/en/2019/06/article\\_0002.html](https://www.wipo.int/wipo_magazine/en/2019/06/article_0002.html).

6 <https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx>.

share of the global economy, generating more than \$500 billion.<sup>7</sup> The expansion of usage and outreach of digital devices has revolutionized how people interact (and the scale within which interaction is possible) with music, videos, books, articles, illustrations, and movies, bringing new challenges for IP systems.

New technologies allow for a closer relationship between consumer and creator, and the establishment of new distribution and business models focused on access to content, not necessarily ownership. Overall, IP systems have lagged in the face of these new challenges, adopting enforcement measures that overcompensate by limiting or prohibiting legitimate uses, as well as unauthorized ones.<sup>8</sup> Governments should regularly evaluate and update IP laws and policies, increasing lawful access to internet content and adopting a common set of digital copyright principles to guarantee a fair balance between the interests of copyright owners and users. It is important to hold on to a common set of global standards for acquiring and distributing content and information.<sup>9</sup>

## Risk to IP in the Digital Age

Fast-paced changes require corporate and government leadership to reassess IP strategies and invest in cybersecurity mechanisms against theft and cybercrimes. Deloitte issued a report in 2016 raising attention to the fact that IP cyber theft had remained in the shadows, with companies reluctant to report or publicize incidents. Since then, new cases of copyright and trademark violations, information breaches, and theft of trade secrets have revealed a significant gap in protection against cyberattacks in the private sector.

The digital environment raises multiple challenges for companies. First, the identity of the counterfeiter is (and often remains) unknown. Second, the high volume and speed of online counterfeit sales make it very difficult for companies and law enforcement offices to track them down.<sup>10</sup> Finally, because often counterfeiters use multiple websites when selling products, this type of IP breach crosses international borders and there is not a single international mechanism to blacklist online pirate goods and artifacts. It is like every jurisdiction is acting on its own to fight a threat that does not respect borders.

Data integrity is another IP-related cybersecurity risk. While it is not in the newspaper headlines like data exfiltration, data integrity attacks could be even more damaging. These attacks can consist of undetected tampering with digital IP or data used to develop AI with enormous consequences in industries as diverse as pharmaceuticals, entertainment, and software. In addition, while digitization can be an excellent preservation technique, it comes with its own data integrity fragility that could affect future generations' understanding of what is true about the past.

## New and Emerging Players

New global players have emerged with IP global market share. Asia is rising as a region with innovative potential, responsible for around two-thirds of worldwide filing activity for patents, trademarks, and industrial designs. Since 2019, China has been the country with the most patents granted worldwide to resident and non-resident companies, followed by the United States. The IP office of China received close to 97 percent of the 2.3 million utility model applications, a special model of a patent right, filed in 2019. For a third consecutive year, China-based telecoms giant Huawei Technologies was the top corporate filer, with 4,411 published Patent Cooperation Treaty (PCT) applications. South Korea continues to rank at the top of the list for most patents per unit of GDP (7.7). The United States is sixth on the podium count, with 1.3 patent applications relative to GDP. However, Americans still hold the highest number of patents in force worldwide (3.1 million). In Asia, Japan is a leading innovator economy that ranks high in patent families and patents per origin.<sup>11</sup> Among low- and middle-income countries, Brazil, Mexico, Thailand, Turkey, and South Africa are the top five on the podium of growth in patent applications.

## IP Fuels Innovation

One of the goals of IP law and policies is to promote creativity and innovation. By protecting the interests of inventors and ensuring that they can control the commercial use of their inventions, IP boosts competitiveness and fuels innovation in at least six different ways. First, with a patent, an inventor or small business knows there is a good chance that they will get a return on the time, effort, and money they invested in

7 [https://www.americanbar.org/groups/intellectual\\_property\\_law/publications/landslide/2019-20/march-april/cultivating-economic-benefits-creativity-finding-right-balance-ip-laws/](https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2019-20/march-april/cultivating-economic-benefits-creativity-finding-right-balance-ip-laws/).

8 *ibid.*

9 *ibid.*

10 [https://www.wipo.int/wipo\\_magazine/en/2018/si/article\\_0005.html](https://www.wipo.int/wipo_magazine/en/2018/si/article_0005.html).

11 [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gii\\_2020/jp.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020/jp.pdf).

developing a technology. Second, the revenues generated from commercially successful patent-protected technologies make it possible to finance further technological research and development (R&D). Third, holding a patent makes a small business more attractive to investors. Fourth, the technical information and business intelligence generated by the patenting process can spark new ideas and promote new inventions. Finally, IP rights incentivize entrepreneurs to keep pushing for new advances in the face of adversity and facilitate the free flow of information by sharing the protected know-how critical to the original. In turn, this process leads to new innovations and improvements on existing ones.

However, with a new innovation paradigm emerging focused on collaboration and end-user orientation – and even the involvement of users and the population at large in creative efforts and the development of new artifacts – businesses and governments need to balance IP rights management to introduce “openness” in the process of innovation and benefit from this trend.<sup>12</sup> This can be a challenging effort for many businesses and IP authorities. Open innovation and collective creativity rely on communication and information exchange, and companies often need to develop new protocols to simultaneously facilitate collaboration, engage with outside parties, and protect IP rights. New governance frameworks could be designed to address this gap and power collective creations.

Currently, intellectual property rights exist at a national level, regulated by domestic law. If an IP right has been granted through an organization like the WIPO or the Hague System, the resulting IP rights are national titles in each of the countries designated by the applicant.<sup>13</sup> Given the localization and independence of IP systems, there is potential for conflicts on the international stage, and the lack of a seamless global IP system creates barriers for innovators and costs for companies.

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<sup>12</sup> [https://www.wipo.int/edocs/mdocs/mdocs/en/wipo\\_ipr\\_ge\\_11/wipo\\_ipr\\_ge\\_11\\_topic6.pdf](https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_ipr_ge_11/wipo_ipr_ge_11_topic6.pdf).

<sup>13</sup> <https://www.innovationpolicyplatform.org/www.innovationpolicyplatform.org/content/international-dimensions-ip-systems/index.html>.

## Trends

- Organizations are connecting with outside partners via open innovation initiatives.
- Co-creation and collective creativity are gaining momentum.
- Digital technologies allow for new and previously unimagined uses of today's IP.
- New IP licensing models such as Creative Commons are emerging.
- More countries look to IP taxes to boost IP applications and incentives for innovation.
- IP is changing to be more collaborative, creative, and inclusive.
- Creation is increasingly dependent on data.
- Data governance and stewardship is maturing to acknowledge that a sustainable approach recognizes both data opportunities and risks.
- AI is inventing new artifacts, and more can be expected to come in terms of AI inventorship.

## Challenges

- IP licensing models need to adapt to collaboration, collective creativity and open setups.
- The process of obtaining IP licenses takes time and is costly.
- The lack of a globally functional and enforceable IP system creates barriers for innovators.
- Technology is accelerating and IP systems need to adapt to remain relevant.
- Entry barriers in IP hinder and slow down the ability and effectiveness of innovation.
- Global enforcement for IP rights is lacking given the high amounts of IP theft globally.
- If not well-engineered, IP models can keep information inaccessible and hinder innovation.
- There is a gap between creating intellectual property and turning it into valuable content.
- The rise of AI has prompted questions on who gets IP rights to AI-created content.
- There is a missing link between data stewardship and future IP that needs to be addressed.
- There is a persistent gender gap for those who are applying for IP rights.
- There is an emerging challenge related to the use of personal data to generate IP (e.g. by AI).

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