

Boosted by the Pandemic: Intellectual Property as a Collaboration Tool

Abstract

Innovation on a worldwide scale is most likely to happen through collaboration. The sum of the minds well-structured and properly organized can be the only path towards recovery. Before the pandemic, we were already shifting as a society towards openness, and now it appears to be our best chance to succeed. Intellectual property is the key that will unlock the answers to prevent, treat, and cure COVID-19 or the key that will lock them away. Like with any other tool, its results – and our fate – will depend on the hands turning the key.

The way we were during the analog lifetime is still present in our collective memories, and perhaps in some vintage devices, we like to keep around. We witnessed not long ago how a workplace that relied on a fax machine to receive simple documents now seemingly builds devices remotely through a 3D printer. The transformation not only occurred in the technologies but in the process of making them. We were advancing from absolute secrecy in research and development to openness and shared knowledge. Thus, this new way of life brought great risks but even greater prospects. With open horizons and a landscape to redesign through new technologies enhancing the reimagination of business models and placing collaboration in the centre, we felt limitless.

In the rise of openness becoming the norm for new developments and technologies, we suddenly found ourselves in the wake of a once-in-a-century pandemic. We can hardly say all we have lost during this worldwide crisis, but exactly how we have heard a million times, there are opportunities in every crisis.

Intellectual property is the key that will unlock the answers to prevent, treat, and cure COVID-19 or the key that will lock them away. Like with any other tool, its results – and our fate – will depend on the hands turning the key.

In the present essay, I will first describe the adjustment we were already experiencing in intellectual property mainly caused by the development of new technologies and new creative dynamics: (i) The kick-off that initiated a change. Then, I will explain the impact of the COVID-19 on intellectual property: (ii) The outbreak that boosted a transformation.

The Kick-Off that Initiated a Change

Long before the pandemic, we were already in the midst of the Fourth Industrial Revolution,¹ surrounded by new technologies, ‘blurring the lines between the physical, digital, and biological spheres.’² These innovations are often developed either as a whole or in part under multiple and different open methods or systems. Numerous innovators were already pushing the envelope of traditional intellectual property (IP)³ in the embodiment of artificial intelligence (AI), blockchain, 3D printing, Internet of Things (IoT), autonomous vehicles, biotechnology, among others.⁴ However, openness and collaboration are not ends in themselves; they serve as mechanisms to improve novelty, efficiency, and societal impact of scientific research.⁵ Let us first take a glance at some of the most relevant open models on the current context: open innovation, open access, open source, and patent pool.

‘Open innovation is one of the most successful innovation strategies of our times.’⁶ This model is where firms and individuals are to meet their organizational demands while

¹ Klaus Schwab, *The Fourth Industrial Revolution* 6–13 (2016). Wesley Doorsamy, Babu Sena Paul & Tshilidzi Marwala, *The Disruptive Fourth Industrial Revolution: Technology, Society and Beyond* (2020).

² Klaus Schwab, *The Fourth Industrial Revolution*, Foreign Affairs (December 12, 2015), <https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution>

³ Eleonora Rosati, *Ebooks and mass digitization projects: the role of licensing*. § 10, 201-2016 (Tanya Aplin ed., Edward Elgar Publishing, 2020). Christopher Heath, Anselm Kamperman Sanders, Anke Moerland, *Intellectual Property Law and the Fourth Industrial Revolution* (2020)

⁴ Bernard Marr, *Tech Trends in Practice: The 25 Technologies that are Driving the 4th Industrial Revolution* (2020)

⁵ Susanne Beck, Carsten Bergenholtz, Marcel Bogers, Tiare-Maria Brasseur, Marie Louise Conradsen, Diletta Di Marco, Andreas P. Distel, Leonhard Dobusch, Daniel Dörler, Agnes Effert, Benedikt Fecher, Despoina Filiou, Lars Frederiksen, Thomas Gillier, Christoph Grimpe, Marc Gruber, Carolin Haeussler, Florian Heigl, Karin Hoisl, Katie Hyslop, Olga Kokshagina, Marcel LaFlamme, Cornelia Lawson, Hila Lifshitz-Assaf, Wolfgang Lukas, Markus Nordberg, Maria Theresa Norn, Marion Poetz, Marisa Ponti, Gernot Pruschak, Laia Pujol Priego, Agnieszka Radziwon, Janet Rafner, Gergana Romanova, Alexander Ruser, Henry Sauermann, Sonali K. Shah, Jacob F. Sherson, Julia Suess-Reyes, Christopher L. Tucci, Philipp Tuertscher, Jane Bjørn Vedel, Theresa Velden, Roberto Verganti, Jonathan Wareham, Andrea Wiggins & Sunny Mosangzi Xu, *The Open Innovation in Science research field: a collaborative conceptualisation approach*, Industry and Innovation, (August 4, 2020), <https://doi.org/10.1080/13662716.2020.1792274>

⁶ Roya Ghafele, *Global Patent Strategy over Vaccine Nationalism* (June 3, 2020), http://patentblog.kluweriplaw.com/2020/06/03/global-patent-strategy-over-vaccine-nationalism/?doing_wp_cron=1598812587.2899780273437500000000

navigating outside their organizational boundaries.⁷ Thus, it places value creation and value capture as the business model.⁸ In other words: ‘Open innovation refers to an innovation model that emphasizes purposive inflows and outflows of knowledge across the boundary of a firm to leverage external sources of knowledge and commercialization paths, respectively.’⁹

There are three types of open innovation, and for each, there is a business model and a strategy (Table 1):¹⁰

Table 1. Types of Open Innovation

Type	Business model	Strategy
Outside-In	The firm welcomes external inputs and decides which contributions will be taken forward	Scouting, in-licensing IP, university research programs, crowdsourcing, competitions and tournaments, communities, and spin- ins or spin-back
Inside-Out	The firm puts forward some undeveloped intangible assets for others to use	Selling or revealing, out-licensing IP and technology, donating IP and technology, spinouts, corporate venture capital, corporate incubators, joint ventures and alliances
Outside-In & Inside-Out	Combination of inflows and outflows of knowledge to collaboratively develop and/or commercialize an innovation	Strategic alliances, joint ventures, consortia, networks, ecosystems, and platforms

⁷ Robert Bell, John Jung & Louis Zacharilla, *Brain Gain: How innovative cities create job growth in an age of disruption* 33–36 (2014).

⁸ Henry Chesbrough & Wim Vanhaverbeke & Joel West, *Open Innovation: Researching A New Paradigm* 1–2 (2008).

⁹ Henry Chesbrough, Wim Vanhaverbeke, & Joel West, *Explicating Open Innovation: Clarifying an Emerging Paradigm for Understanding Innovation*, Oxford University Press (September 30, 2014), <https://ssrn.com/abstract=2427233>

¹⁰ *Ibid.*

A great example, the World Wide Fund for Nature (WWF) and Conservation X Labs partnership to create Ocean X Labs: ‘an incubator that harnesses the power of emergent technologies, open innovation, collaborative problem solving, and entrepreneurship to source, develop, and scale new concepts for oceans conservation.’¹¹ In 2016, they launched a USD2.5 million-dollar global competition for transformative innovations in aquaculture.¹²

The open access model for research literature means free availability to read, machine-read, download, copy, distribute, use for any other lawful purpose, without financial, legal, or technical barriers other than accessing the Internet.¹³ The cost of publication is under the responsibility of the author. At the same time, copyright is often managed via creative commons licences and generally only request the recognition of attributions and integrity rights.¹⁴ A noteworthy application of this concept is Share – Link – Cite (SLC) Research Data with ‘150 members based in over 20 countries around the world collectively publish 66% of all journal articles and tens of thousands of monographs and reference works.’¹⁵

Additionally, similar models are expressed in diverse international initiatives, such as the Declaration on Access to Research Data from Public Funding¹⁶ and the A2K (Access to Knowledge) movement.¹⁷

¹¹ *World Wide Fund for Nature (WWF)* (August 29, 2020), <https://www.worldwildlife.org/projects/oceans-x-labs-bringing-big-ideas-to-ocean-conservation>

¹² *Ocean X Labs* (August 29, 2020), <http://www.oceansxlabs.org/how-does-oceans-x-labs-work>

¹³ Marc Scheufen, *Copyright Versus Open Access* 57 (2012). Michael W. Carroll, *Why Full Open Access Matters*, *PLoS Biology* (November 2011), <https://doi.org/10.1371/journal.pbio.1001210>

¹⁴ *See supra* n.10. *Budapest Open Access Initiative* (August 27, 2020), <https://www.budapestopenaccessinitiative.org/boai-10-recommendations>

¹⁵ *Share – Link – Cite* (August 28, 2020), <https://www.stm-researchdata.org>

¹⁶ *Organisation for Economic Co-operation and Development (OECD)*, Declaration on Access to Research Data from Public Funding, OECD/LEGAL/0321. (August 20, 2020) <https://legalinstruments.oecd.org/public/doc/157/157.en.pdf>

See supra n.10.

¹⁷ *Draft Treaty On Access To Knowledge* (August 20, 2020) http://www.cptech.org/a2k/a2k_treaty_may9.pdf

The open source model provides co-development of a shared technology platform that looks for common ground and mutual benefits.¹⁸ Open source mission is to enable ‘a development method for software that harnesses the power of distributed peer review and transparency of process. The promise of open source is higher quality, better reliability, greater flexibility, lower cost, and an end to predatory vendor lock-in.’¹⁹ The perfect example, Linux, ‘the best-known and most-used open source operating system.’²⁰

The patent pool model is a private arrangement with two or more patent owners to license their patents to each other, which could further allow them to licence the pool as a package to another.²¹ This model is far from novel and has proven time and time again successful. As in the case of Medicines Patent Pool (MPP) to improve global access to medicines,²² which have reported from January 2012 to December 2019 savings of USD1.44 billion to patients by making available low-cost medications and supply of 31.4 million patient-years of treatments.²³

IP is the way ‘in’ the way ‘out’ and the reason why these open models happen. IP is no longer a by-product of innovation; IP is now a critical element of innovation.²⁴ Therefore, IP related risks directly impact the likeliness of collaboration, when IP protection mechanisms

¹⁸ Jianan Wang & Xiaobao Peng, *A Study of Patent Open Source Strategies Based on Open Innovation: The Case of Tesla 8*, 386-394, *Open Journal of Social Sciences* (July 2020), <https://doi.org/10.4236/jss.2020.87031>.

Vikrant Narayan Vasudeva, *Open Source Software and Intellectual Property Rights* (2014)

¹⁹ *Open Source Initiative* (August 18, 2020) <https://opensource.org/about>

²⁰ *Open Source Initiative* (August 23, 2020) <https://opensource.com/tags/linux>

²¹ Geertrui van Overwalle, *Gene Patents and Collaborative Licensing Models: Patent Pools, Clearinghouses, Open Source Models and Liability Regimes 1–5*, Cambridge University Press (2009) <https://doi.org/10.1017/CBO9780511581182>

²² Muhammad Zaheer Abbas, *Treatment of the Novel COVID-19: Why Costa Rica’s Proposal for the Creation of a Global Pooling Mechanism Deserves Serious Consideration?* 7, *Journal of Law and the Biosciences* (June 26, 2020) <https://doi.org/10.1093/jlb/ljaa049>. Ellen 't Hoen, *Private Patents and Public Health: Changing Intellectual Property Rules for Access To Medicines* 31, *Health Action International* (2016). Jorge Bermudez & Ellen 't Hoen, *The UNITAID Patent Pool Initiative: Bringing Patents Together for the Common Good* 4, *The Open AIDS Journal* 39 (2010).

²³ *Medicines Patent Pool (MPP)* (August 30, 2020) <https://medicinespatentpool.org/>

²⁴ See *supra* n. 5

are in place, firms are more willing to engage in collaboration.²⁵ For this challenge, new technology may also be the key: blockchain. Blockchain, as a distributed registry technology, provides a secure registration of the development and trajectory that led to the intangible asset.²⁶ Consequently, open innovation, open access, open source, patent pool, and other open models use IP as a tool for collaboration.²⁷ Exclusive intangible assets make these collaborations possible and feasible. The shift to a network mindset, where innovators seek to cooperate under equitable conditions, has been changing our creative capabilities, and thanks to this kick-off, we were on our way to embrace the coming transformation boosted by the pandemic.

The Outbreak that Boosted a Transformation

Virologists have long anticipated the public health threat of emerging infectious diseases. The emerging infectious diseases are those new infections with rapid incidence and geographic range.²⁸ In this group, we can start by citing COVID-19, and continue with recent previous outbreaks such as Ebola, Zika, MERS7, and SARS8. ²⁹ At the time of writing, COVID-19 has over 24 million confirmed cases and over 830,000 confirmed deaths in 216 countries, areas, or territories.³⁰

²⁵ Ioana Stefan, Pia Hurmelinna-Laukkanen, Wim Vanhaverbeke, *Trajectories towards balancing value creation and capture: Resolution paths and tension loops in open innovation projects*, International Journal of Project Management (August 7, 2020) <https://doi.org/10.1016/j.ijproman.2020.06.004>. Paul Goldstein, *Copyright's Highway 170–199* (2019).

²⁶ Boutaky Soukaina; Sahib Eddine Abdelhak; El Mousadik Mouna, *Blockchain and Open Innovation: A Literature Review* 524 – 538 (June 16, 2020) <https://doi.org/10.5281/zenodo.3895363>

²⁷ Mariana Mazzucato, *The Value of Everything: Making and Taking in the Global Economy* 189-228 (2018)

²⁸ Stephen S. Morse, *The Public Health Threat of Emerging Viral Disease* 951S–957S, *The Journal of Nutrition*, Volume 127, Issue 5 (May 1997) <https://academic.oup.com/jn/article/127/5/951S/4724130>

²⁹ Ana Santos Rutschman, *The COVID-19 Vaccine Race: Intellectual Property, Collaboration(s), Nationalism and Misinformation*, *Washington University Journal of Law and Policy*, Vol. 64, 2020, (July 21, 2020) <https://ssrn.com/abstract=3656929>

³⁰ *World Health Organization* (August 28, 2020) <https://covid19.who.int/>

This pandemic ‘calls for a transparent, robust, coordinated, large-scale, and science based global response in the spirit of solidarity.’³¹ We will have to break away from the actuarial agency model where an individual is regarded as a risk manager of their own health, instead of a person who should benefit from public health measures.³² One person, one community or one nation approach, has proven inefficient to tackle not only this disease but the current and future worldwide challenges we will be confronting together. Accordingly, traditional IP frameworks³³ already on their way to change, now have the opportunity to transform for societal benefits.³⁴ Providing patented and otherwise protected pharmaceuticals affect public health.³⁵ Perhaps only with a global pool, a global database on research and development activities related to COVID-19, we can learn to prevent, treat, and cure this virus.³⁶

Compulsory licensing is a well-known and sometimes dreaded way in which governments can take the exclusivity over a patent and open the production or commercialization of a specific invention.³⁷ National measures allowing the use of compulsory licensing³⁸ and

³¹ Luca Li Bassi and Lenias Hwenda, *COVID-19: time to plan for prompt universal access to diagnostics and treatments* (April 16, 2020) [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(20\)30137-6/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30137-6/fulltext). *Extraordinary G20 Leaders' Summit: Statement on COVID-19. Riyadh, Kingdom of Saudi Arabia* (March 24, 2020) [https://g20.org/en/media/Documents/G20_Extraordinary%20G20%20Leaders%E2%80%99%20Summit_Statement_EN%20\(3\).pdf](https://g20.org/en/media/Documents/G20_Extraordinary%20G20%20Leaders%E2%80%99%20Summit_Statement_EN%20(3).pdf)

³² Gordon Hull, *The Biopolitics of Intellectual Property: Regulating innovation and personhood in the information age*. Cambridge University Press (2019).

³³ Paul Torremans, *Intellectual Property Law and Human Rights*. Wolters Kluwer (2020).

³⁴ See *supra* n. 28

³⁵ Jochen Buhling, *Patent Protection for Second Medical Uses*. AIPPI Law Series, Wolters Kluwer (2016)

³⁶ Frank Tietze, Pratheeba Vimalnath, Leonidas Aristodemou & Jenny Molloy, *Crisis-Critical Intellectual Property: Findings from the COVID-19 Pandemic*, Centre for Technology Management Working Paper Series (April 2020) <https://doi.org/10.17863/CAM.51142>

³⁷ Hilary Wong, *The case for compulsory licensing during COVID-19* (May 15, 2020) <http://jogh.org/documents/issue202001/jogh-10-010358.pdf>. Francois Pochart, Mathilde Rauline, Océane de La Verteville, *Compulsory licenses granted by public authorities: an application in the Covid-19 crisis in France? Part 1*, Kluwer Patent Blog (April 23, 2020) http://patentblog.kluweriplaw.com/2020/04/23/compulsory-licenses-granted-by-public-authorities-an-application-in-the-covid-19-crisis-in-france-part-1/?doing_wp_cron=1598811567.8446838855743408203125. Nuno Pires de Carvalho, *The TRIPS Regime of Patents and Test Data*, 5th Edition (2010)

³⁸ See *supra* n. 33

similar efforts to manage COVID-19 are now adopted in Colombia, Chile, Ecuador, Israel, Canada, Germany, Peru.³⁹ Therefore, a voluntary approach opening all relevant information may lower the risk of forced official approaches or even direct third party infringements.

Outbreaks are regularly the triggers for research and development (R&D) in vaccines targeting emerging infectious diseases. Given that patent centred R&D models often fail to provide sufficient incentives⁴⁰ for vaccine innovations.⁴¹ However, thanks to the existence of entities that defy this paradigm, we were better suited to push through. Gavi, a public-private partnership entirely focused on vaccine supply and procurement, and the Coalition for Epidemic Preparedness Innovations (CEPI), have been vital since the early days of the pandemic for the development of vaccine candidates.⁴² Likewise, we are currently witnessing an acceleration in innovation and collaboration on medicines, e.g., generic manufacture and distribution of drugs under non-exclusive voluntary licences.⁴³ Additionally, certain medical devices are also needed on a global scale. For this and other cases where existing manufacturers own relevant IP, new manufactures can join via open innovation and together address the worldwide demand.⁴⁴ The Food and Drug Administration (FDA), in partnership with other entities, is working to support non-traditional manufacturing approaches to address device shortages, including personal protective equipment (PPE).⁴⁵

³⁹ See *supra* n. 28.

Marcos Wachowicz, *Open Access to Scientific Innovation as a Means to Combat COVID-19* 783–784, GRUR International (July 21, 2020) <https://doi.org/10.1093/grurint/ikaa093>

⁴⁰ Andrea Alunni. *Intellectual property is key to solving crisis such as the Covid-19 emergency* (April 14, 2020) <https://blogs.lse.ac.uk/businessreview/2020/04/14/intellectual-property-is-key-to-solving-crisis-such-as-the-covid-19-emergency/>.

⁴¹ See *supra* n. 26. Julian Le Grand, Carol Propper & Sarah Smith. *The Economics of Social Problems* 27– 48 (4th ed. 2008)

⁴² *Ibid.*

⁴³ Jillian C. Kohler, and Tim K. Mackey, *Why the COVID-19 pandemic should be a call for action to advance equitable access to medicines*. BMC Med 18, 193 (2020). <https://doi.org/10.1186/s12916-020-01661-3>

⁴⁴ See *supra* n. 33

⁴⁵ *Food and Drug Administration (FDA): 3D Printing in FDA's Rapid Response to COVID-19* (August 29, 2020) <https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/3d-printing-fdas-rapid-response-covid-19>

Following the four open models we have discussed in the previous section, here are a few examples of how they are implemented during the pandemic (Table 2):

Table 2. COVID-19 Open Model Initiatives

Open innovation	– COVID-19 Community Mobility Reports (Google) ⁴⁶
	– COVID-19 Mobility Data Network ⁴⁷ : network of infectious disease epidemiologists
	– Europe PMC ⁴⁸
Open access	– Amazon Web Services (AWS) data lake ⁴⁹
	– ClinicalTrials.gov ⁵⁰
	– The COVID-19 High Performance Computing Consortium ⁵¹
	– Nextstrain SARS-CoV-2 resources ⁵²
Open source	– The COVID Tracking Project ⁵³
	– Fighting COVID-19 with 3D printing ⁵⁴
	– Open Source Medical Supplies ⁵⁵
	– Open Source Ventilator Projects ⁵⁶
Patent pool	– The COVID-19 Technology Access Pool (C-TAP) ⁵⁷

⁴⁶ Google: COVID-19 Community Mobility Reports (August 29,2020) <https://www.google.com/covid19/mobility/>

⁴⁷ COVID-19 Mobility Data Network (August 29,2020) <https://www.covid19mobility.org/>

⁴⁸ Europe PMC: Search worldwide, life-sciences literature (August 30, 2020) <https://europepmc.org/>

⁴⁹ Amazon: A public data lake for analysis of COVID-19 data (August 30, 2020)

<https://aws.amazon.com/es/blogs/big-data/a-public-data-lake-for-analysis-of-covid-19-data/>

⁵⁰ ClinicalTrials.gov: Federally-funded clinical studies related to COVID-19 (August 29, 2020)

<https://clinicaltrials.gov/ct2/results?cond=COVID-19>

⁵¹ The COVID-19 High Performance Computing Consortium (August 29, 2020) <https://covid19-hpc-consortium.org/>

⁵² Nextstrain: Nextstrain SARS-CoV-2 resources (August 30, 2020) <https://nextstrain.org/sars-cov-2/>

⁵³ The COVID Tracking Project (August 29, 2020) <https://covidtracking.com/>

⁵⁴ America Makes: Fighting COVID-19 with 3D Printing (August 29, 2020)

<https://www.americamakes.us/statement-on-covid-19/>

⁵⁵ Open Source Medical Supplies (OSMS): Open Source Medical Supplies (August 29, 2020)

<https://opensourcemedicalsupsplies.org>

⁵⁶ University of Florida Health: The Center for Safety, Simulation and Advanced Learning Technologies (August 29, 2020) <https://simulation.health.ufl.edu/technology-development/open-source-ventilator-project/>

⁵⁷ World Health Organization (WHO): COVID-19 technology access pool (August 29, 2020)

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/covid-19-technology-access-pool>

As a final illustration of a broader initiative, the Open COVID Pledge, in which participants pledge to share their IP in the fight against COVID-19,⁵⁸ have 30 pledgors and 42 supporters.⁵⁹ The pledged IP is searchable by using a semantic AI-based tool. Some notable pledged IP: Mitsubishi Electric – Wireless Localization for Contact Tracing,⁶⁰ Fujitsu – Faster disease diagnosis using computer software,⁶¹ and HPE – Cryo-electron microscopy.⁶²

As society evolves, legal frameworks and organizations follow. Our interconnection was made evident by the global fast-spreading of COVID-19, but also by the worldwide response to overcome it. Thanks to new technologies and new universal challenges, we have seen the great benefits of IP as a collaboration tool. IP is in the core of innovation, and how we innovate is bound to transform how we use IP. In this pandemic, as in life, we must understand that there is strength in numbers.

⁵⁸ See *supra* n. 33

⁵⁹ *Open COVID Pledge* (August 30, 2020) <https://opencovidpledge.org/>

⁶⁰ *Open COVID Pledge: Mitsubishi Electric – Wireless Localization for Contact Tracing* (August 30, 2020) <https://opencovidpledge.org/2020/08/07/mitsubishi-electric-wireless-localization-for-contact-tracing/>

⁶¹ *Open COVID Pledge: Fujitsu – Faster disease diagnosis using computer software* (August 30, 2020) <https://opencovidpledge.org/2020/06/03/fujitsu-faster-disease-diagnosis-using-computer-software/>

⁶² *Open COVID Pledge: HPE – Cryo-electron microscopy* (August 30, 2020) <https://opencovidpledge.org/2020/08/07/hpe-cryo-electron-microscopy-2/>

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