

# WIPO MAGAZINE

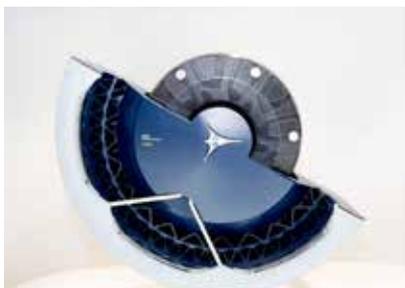
FEBRUARY 2019

No. 1



The IP behind the AI boom

p. 2



Elaphe: driving the development of electric vehicles

p. 12



UPOV: supporting food security with plant variety protection

p. 44

Protecting  
rainforest-  
derived  
technology  
equitably

p. 32





# Table of Contents

2	The IP behind the AI boom
12	Elaphe: driving the development of electric vehicles
20	Worldwide activities on licensing of standard essential patents
26	Eurasian Patent Office set to extend its operations
32	Protecting rainforest-derived technology equitably
39	An expanding role for IP Offices in alternative dispute resolution
44	UPOV: supporting food security with plant variety protection

Editor: **Catherine Jewell**

© WIPO, 2019



Attribution 3.0 IGO  
(CC BY 3.0 IGO)

The user is allowed to reproduce, distribute, adapt, translate and publicly perform this publication, including for commercial purposes, without explicit permission, provided that the content is accompanied by an acknowledgement that WIPO is the source and that it is clearly indicated if changes were made to the original content.

Adaptation/translation/derivatives should not carry any official emblem or logo, unless they have been approved and validated by WIPO. Please contact us via the WIPO website to obtain permission.

When content published by WIPO, such as images, graphics, trademarks or logos, is attributed to a third party, the user of such content is solely responsible for clearing the rights with the right holder(s).

To view a copy of this license, please visit <https://creativecommons.org/licenses/by/3.0/igo>

Cover images:

Left to right: zhuyufang / E+ / Getty Images; Courtesy of Elaphe Propulsion Technologies; jxfzsy / E+ / Getty Images  
Main image: Yves Picq CC BY-SA 3.0 (<http://veton.picq.fr>)

## Acknowledgements:

2	<b>Alejandro Roca Campaña, Irene Kitsara and Aliça Daly</b> , Access to Information and Knowledge Division, WIPO
12	<b>Victor Vazquez-Lopez</b> , Department of Transition and Developed Countries, WIPO
20	<b>Tomoko Miyamoto</b> , Patent Law Division, WIPO
26	<b>Michal Svantner, Ilya Gribkov and Oleksandr Shevchenko</b> , Department of Transition and Developed Countries, WIPO
32	<b>Wend Wendland</b> , Traditional Knowledge Division, WIPO
44	<b>Peter Button and Caroline Rovere</b> , UPOV

The background of the page is a close-up photograph of several white USB-C cables plugged into a multi-port hub. The cables are arranged in a row, and their connectors are clearly visible. In the foreground, there is a small, round, light-colored pot containing dark brown soil and a small green plant. The lighting is warm and soft, creating a shallow depth of field that blurs the background.

# The IP behind the AI boom

By **James Nurton**, Editor,  
*WIPO Technology Trends:*  
*Artificial Intelligence*

WIPO's new flagship study documents a massive recent surge in artificial-intelligence-based inventions. The first publication in the *WIPO Technology Trends* series defines and measures innovations in AI and provides a common information base on AI for policy and decision makers in government and business as well as concerned citizens, who are grappling with the ramifications of this new technology.



Artificial intelligence (AI) is set to transform all aspects of our lives – including our workplaces, homes and vehicles. AI tools are already widely familiar in Internet-searching, computers with speech recognition and games such as chess, but the next few years will see AI become ever more widespread, in everything from cars to robots to medicine. This will have significant repercussions for society, as AI performs many tasks that, until now, have been done by humans. In her keynote address at the Consumer Electronics Show in Las Vegas in January 2019, IBM CEO Ginni Rometty predicted that, because of AI, “100 percent of jobs will be different”.

But what exactly is AI? What are the technologies and applications that constitute AI? And what do we know about current research in the field, where it is taking place, who is doing it and what fields it covers?

A new flagship WIPO report, the first in a series looking at technology trends, provides some answers to these questions, drawing on data from patent applications, scientific publications and analysis on trends from AI specialists. This first publication in the WIPO Technology Trends series sets out a scheme for categorizing AI technologies and applications that can be used in further research. It also provides a common information base on AI for policy- and decision-makers in government and business, as well as concerned citizens who are grappling with this new disruptive technology.

As noted by WIPO Director General Francis Gurry in a press release announcing the report’s recent launch in Geneva, “AI’s ramifications for the future of human development are profound. The first step in maximizing the widespread benefit of AI, while addressing ethical, legal and regulatory challenges, is to create a common factual basis for understanding of artificial intelligence. In unveiling the first in our *WIPO Technology Trends* series, WIPO is pleased to contribute evidence-based projections, thereby informing global policymaking on the future of AI, its governance and the intellectual property (IP) framework that supports it.”

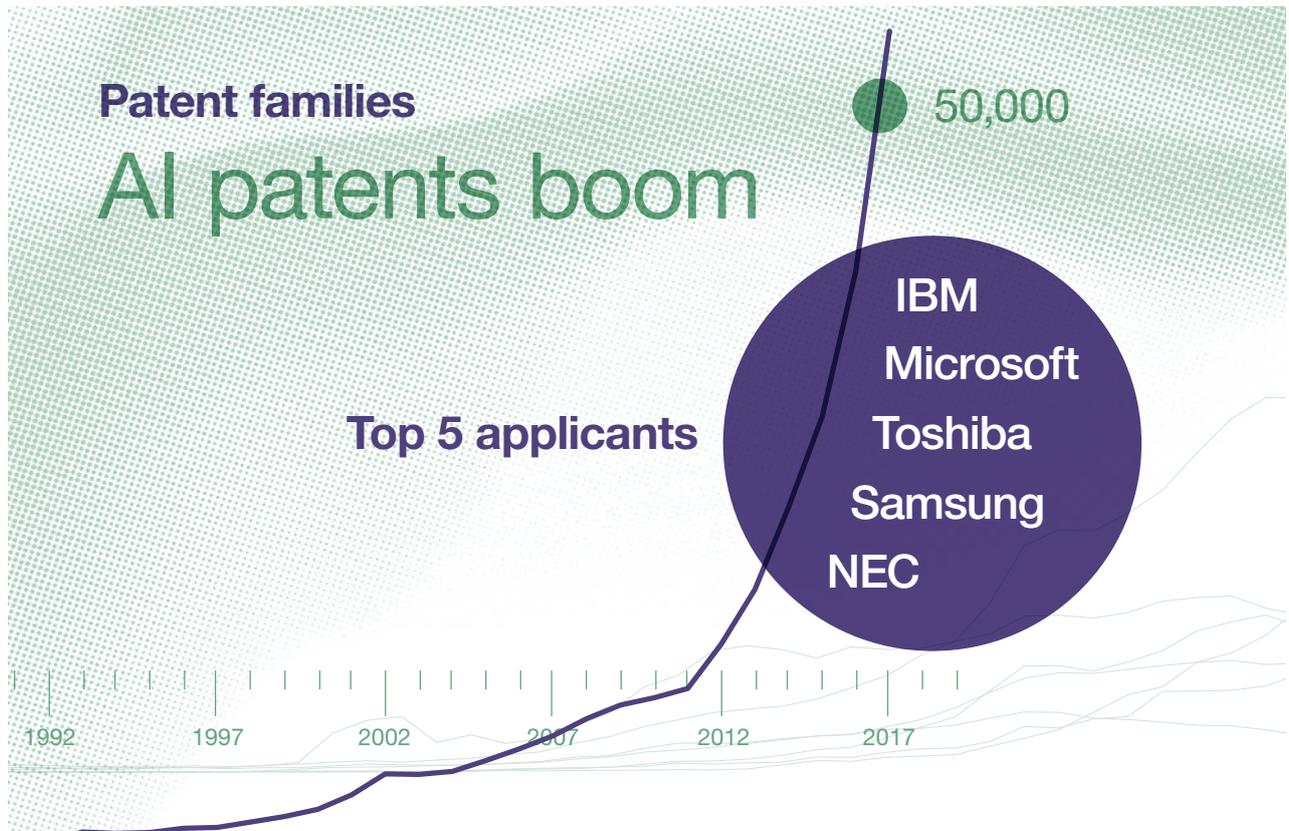
## **THE AI BOOM**

The report shows a massive surge in AI-based innovation. Since AI emerged in the 1960s, innovators and researchers have filed patent applications for nearly 340,000 AI-related inventions and published over 1.6 million scientific publications on AI. AI-related patenting has soared in the past few years, with over half of the identified inventions published since 2013.

The report also identifies a shift from theoretical research to the use of AI technologies in commercial products and services. The boom in scientific publications started around 2001, about 12 years before the surge in patent applications. The decline in the ratio of scientific papers to inventions, from 8:1 in 2010 to 3:1 in 2016, is an indication of the shift from theoretical research to practical implementation.

## **DIVING INTO DEEP LEARNING**

The term AI encompasses many different techniques that are discussed in detail in the report. The most prominent among these is machine learning.



AI patenting has grown dramatically since 2013, with U.S. and Asian companies leading the way.

“AI will transform every facet of society. It brings tremendous promise to improve our lives and the world we live in, but it will require the creation of an AI ecosystem to ensure long-term, sustainable growth.”

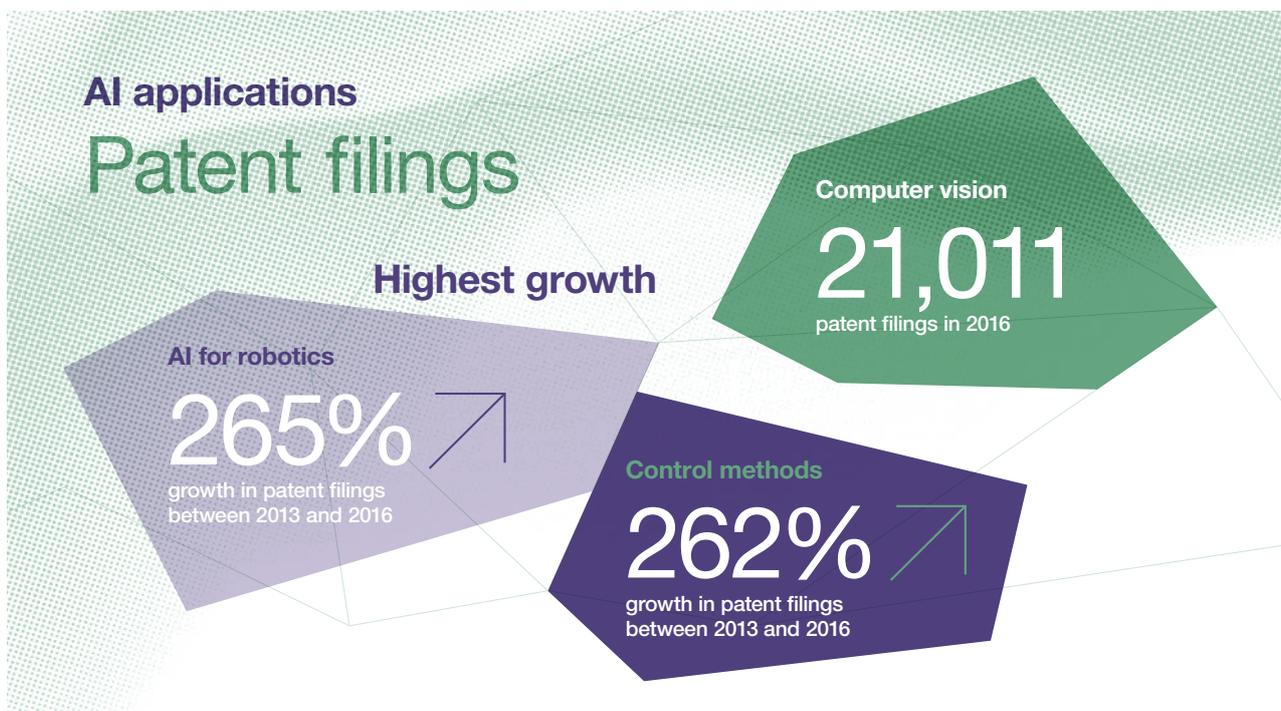
Andrew Ng, CEO, Landing AI and deeplearning.ai

Machine learning, such as the techniques being used by ride-sharing services to minimize detours, is a type of AI that focuses on algorithms that allow machines to learn when exposed to new data, and to make predictions or take decisions about that data without being explicitly programmed to perform that task. Machine learning, in particular the neural networks that have revolutionized machine translation, is referenced in more than one-third of all identified AI inventions.

Even more striking is the prominence of deep learning, a machine learning technique that has the potential to revolutionize AI. Deep learning is the fastest-growing technique in the applications studied, with a 20-fold increase in patent applications – from 118 in 2013 to 2,399 in 2016 – equivalent to a 175 percent average annual growth rate. By contrast, in the same period, the number of patent applications for all technologies grew by just 33 percent, or an average annual rate of 10 percent. Deep learning is a form of machine learning that tries to understand the world in terms of a hierarchy of concepts and involves multiple levels of data processing. It is already proving invaluable in popular speech recognition and machine translation tools.

### INDUSTRY TRENDS

AI-related patents not only disclose AI techniques and applications, they often also refer to a field or industry of application. The WIPO report shows that many sectors and industries are exploring ways to exploit AI commercially. These include banking, entertainment, security, industry, manufacturing, agriculture and networks. Many AI-related technologies can be used across different sectors, as shown by the large number of patents in AI that refer to multiple industries.



AI for robotics and control methods to manage the behavior of devices are the AI application areas with the fastest growth.

“Patenting activity in the artificial intelligence realm is rising at a rapid pace, meaning we can expect a very significant number of new AI-based products, applications and techniques that will alter our daily lives.”

Francis Gurry, Director General, WIPO

The fields showing the highest growth rates in AI-related patent applications between 2013 and 2016, each growing at least 28 percent a year are agriculture; banking and finance; computing in government; law; and transportation. Within these industries, rapidly emerging areas are aerospace and avionics, which grew by 67 percent on average between 2013 and 2016; followed by smart cities (47 percent); autonomous vehicles (42 percent); customer service (38 percent); and affective computing, which allows machines to recognize human emotions (37 percent).

#### THE LEADING COMPANIES AND UNIVERSITIES

Japanese and American companies hold the largest AI patent portfolios (see Table 1). While Japanese consumer companies dominate, the two top spots are held by U.S. companies IBM and Microsoft, whose patent portfolios include a wide range of AI applications and techniques.

But certain companies are strong in different technological fields. For example, Chinese Internet giant Baidu ranks highly for deep learning; Toyota, Bosch and Hyundai are prominent in transportation; and Siemens, Philips and Samsung lead in the life and medical sciences.

Universities and public research organizations are less prominent in the list of top patent filers, accounting for just 167 of the top 500 patent applicants. They are, however, leading in certain areas.

Chinese research organizations make up 17 of the top 20 academic players in AI patenting and 11 of the top 20 in AI-related scientific publications (see Table 2). They are particularly strong in the emerging technique of deep learning. The Chinese Academy of Sciences (CAS) outperforms other similar organizations, with more than 2,500 patent families and more than 20,000 scientific papers published on AI. CAS has the largest deep learning patent portfolio, with 235 patent families. Chinese organizations are consolidating their lead. In the period 2013 to 2016, their AI-related patent filings grew by more than 20 percent per year, matching or beating the growth rates of organizations from other countries.

Organizations from the Republic of Korea also feature prominently among the top academic players, notably the Electronics and Telecommunications Research Institute (ETRI). Nineteen universities or public research organizations from the Republic of Korea feature among the top 500 patent applicants, followed by 20 from the United States and four from Japan. Just four European institutions appear in this list. The highest placed of these is the Fraunhofer Institute (ranked 159<sup>th</sup>).

## KEY MARKETS FOR INNOVATION

The report identifies the most important jurisdictions for AI research, based on the most popular offices for filing AI-related patent applications. The United States Patent and Trademark Office (USPTO) and the China National Intellectual Property Administration (CNIPA) head the list, followed by the Japan Patent Office (JPO). These three offices account for 78 percent of all AI-related patent filings. There is, however, a notable difference between applications filed in Japan and the United States, on the one hand, and those filed in China, on the other hand. While around one third of applications filed in the first two offices are subsequently filed in other countries, just 4 percent of applications first filed in China are subsequently filed elsewhere. This indicates that many Chinese entities are inclined to file patent applications in China alone, perhaps seeing that country as the crucial market for their inventions.

## POLICY CHALLENGES

The data on patents and scientific publications demonstrate the rapid pace of AI innovation. This trend, combined with the broad application of many AI technologies and their potential impact on people's daily lives, means that AI technologies are raising a number of policy challenges for governments and regulators.

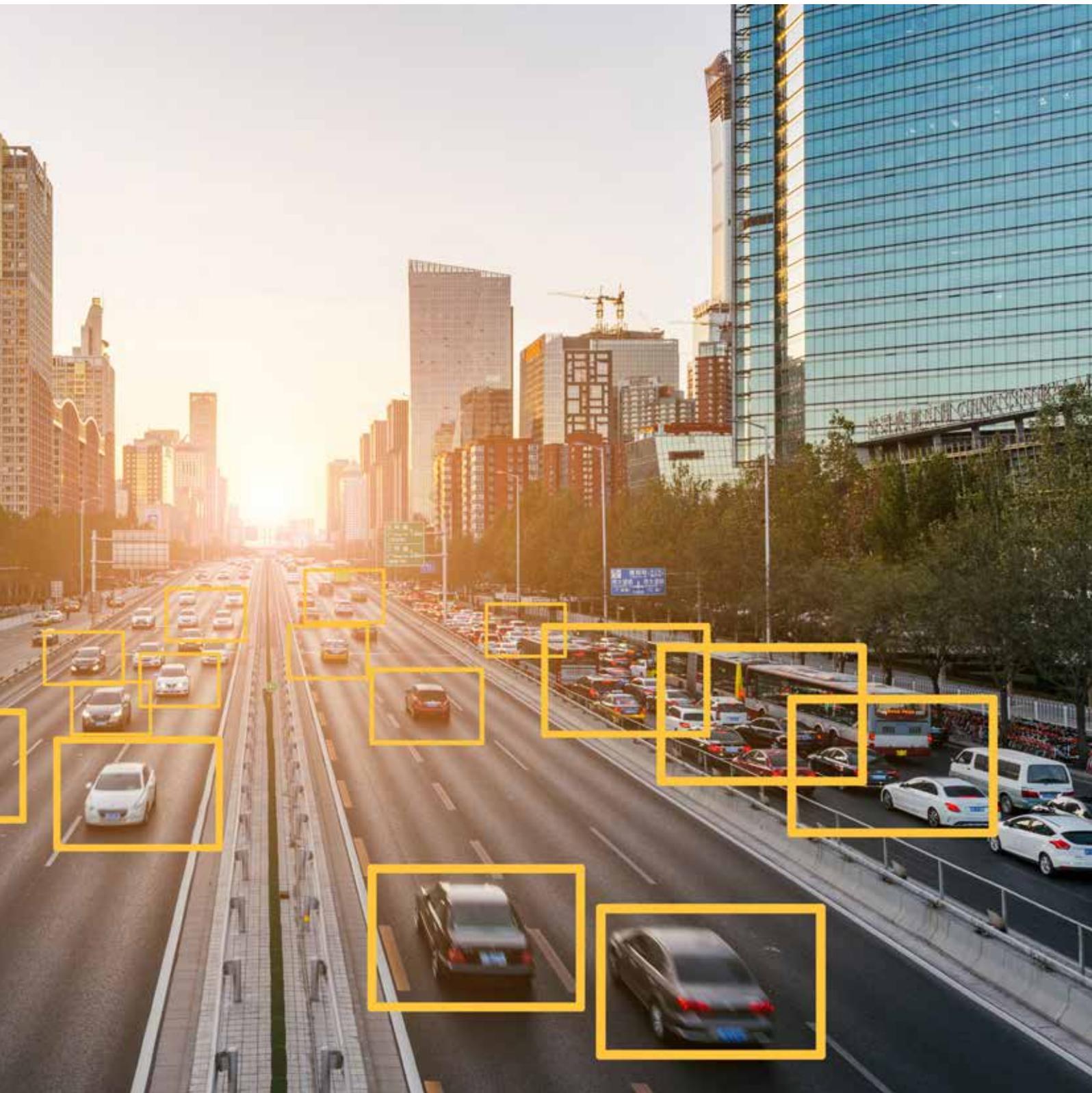
These challenges include the use and protection of personal data, the development of standards and data sharing, how to fund innovation, the regulation of new technologies and even the risk that highly advanced AI – what some have dubbed “superintelligence” – could pose a threat to human existence. Some of these questions are addressed by leading AI experts in the WIPO report, which also provides an overview of some of the policy approaches that governments in different jurisdictions are taking.

One of the contributors, Myriam Côté of Mila (Montreal Institute for Learning Algorithms) in Canada, observes that we are now part of the first major wave in an AI

Photo: Wenjie Dong / iStock / Getty Images Plus



Machine learning is the most popular AI technique being patented and includes the fastest-growing technique, deep learning.



“In future it will be possible to detect diseases from data collected by wearable sensors, and to suggest optimal treatments to prevent these diseases from developing.”

Professor Boi Faltings, Director of the AI Lab at the EPFL

revolution: “Soon, we will see more and more impacts of this technology on our lives. Among them, some should raise our attention: privacy of personal data, fake news generation, employment losses, financial market manipulation, biases in data, diversity issues, etc.” Mila, like other research organizations, is working to increase awareness and understanding of such problems.

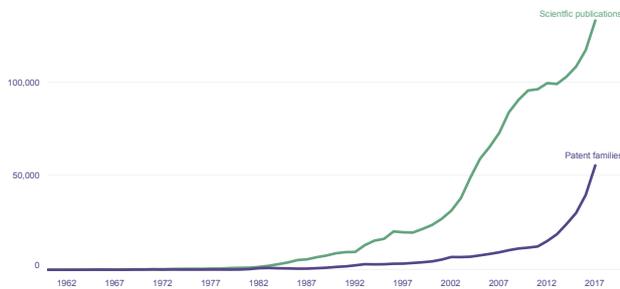
Some experts address the impact AI will have in particular fields, such as digital medicine, and the questions that its use will raise. Boi Faltings of the *École Polytechnique Fédérale de Lausanne* (EPFL), points out that a smartphone app can detect skin cancer at an early stage from an image taken on a camera: “In future it will be possible to detect diseases from data collected by wearable sensors, and to suggest optimal treatments to prevent these diseases from developing. This will, however, require major data collection efforts and possibly new advances in ensuring data privacy.” Another contributor, Aristotelis Tsirigos of New York University School of Medicine in the United States, discusses a recent study to automate lung cancer diagnosis using AI and imaging data. The accuracy of the AI system was 97 percent – slightly better than the performance of three pathologists who diagnosed the same set of tumors.

In his contribution, investor Kai Fu Lee predicts that the next shift in AI will see technologies being honed to fit actual applications: “We’re at the end of the age of discovery and there’s likely to be an age of implementation,” he says. Baidu’s Haifeng Wang echoes this view: “The latest AI ‘boom’ could be generally summarized as the big leap of functional applications thanks to the explosion in big data, computing power and continued advancing algorithms. Now comes a time when AI applications make a real impact on the economy.”

But this rollout brings challenges for both companies and governments. The World Economic Forum is working with business, government, civil society, intergovernmental organizations and academia to co-create governance mechanisms for AI, including an AI Board Toolkit. The Forum’s Kay Firth-Butterfield argues that soon all companies will need to develop an AI strategy and analyze how it is relevant to their business: “Substantial brand value can be lost if the wrong decisions are made about the use of AI. Therefore, it is important that the various regulatory and other governance mechanisms are thought about now. The fast pace of change in this technology is such that we cannot wait.”

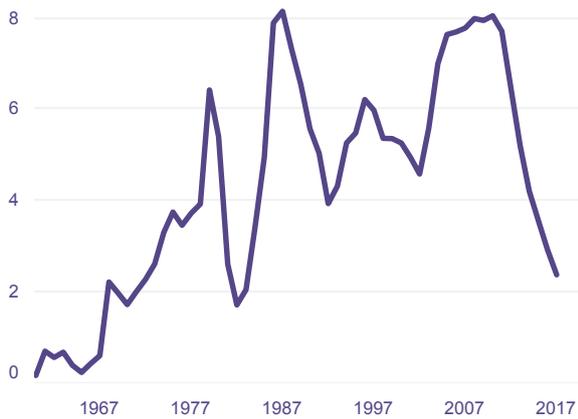
*The WIPO Technology Trends* (WITT) report on AI and a range of resource materials including a series of expert views on AI and a glossary of terms are available at: [www.wipo.int/tech\\_trends/en/artificial\\_intelligence](http://www.wipo.int/tech_trends/en/artificial_intelligence).

**Figure 1: AI patent families and scientific publications by earliest publication year.**



AI patent families grew by an average of 28 percent and scientific publications by 5.6 percent annually between 2012 and 2017.

**Figure 2: Ratio of scientific publications to patent families by earliest publication year.**



The ratio of scientific publications to patent families dropped from 8:1 in 2010 to 3:1 in 2016, indicating a change from theoretical research to practical implementation.

**Table 1: AI published patent applications: top 10 companies**

Rank	Company	Number
1	IBM (U.S.)	8,290
2	Microsoft (U.S.)	5,930
3	Toshiba (Japan)	5,223
4	Samsung (Republic of Korea)	5,102
5	NEC (Japan)	4,406
6	Fujitsu (Japan)	4,303
7	Hitachi (Japan)	4,233
8	Panasonic (Japan)	4,228
9	Canon (Japan)	3,959
10	Alphabet (U.S.)	3,814

**Table 2: AI patent applications: top 10 universities/public research organizations**

Rank	Organization	Number
1	CAS (People's Republic of China (PRC))	2,652
2	ETRI (Republic of Korea)	1,936
3	Xidian University (PRC)	1,423
4	Zhejiang University (PRC)	1,394
5	Industry Academic Cooperation Foundation Korea (Republic of Korea)	1,281
6	Beijing University of Technology (PRC)	1,190
7	Tsinghua University (PRC)	1,172
8	Beihang University (PRC)	1,026
9	Chongqing University (PRC)	996
10	Tianjin University (PRC)	922

# Elaphe: driving the development of electric vehicles

By Catherine Jewell,  
Communications Division, WIPO





Photo: Courtesy of Elaphe Propulsion Technologies

Slovenian company Elaphe Propulsion Technologies is now working with leading brands in the automotive industry. The company wants to become a major global supplier of in-wheel motors for electric vehicles.

For over a century the internal combustion engine has dominated the auto industry. But concerns about the environmental impact of motoring and road safety are fueling interest in electric vehicles and the market for in-wheel motors. Business analysts Fact.MR predict that, for the period 2018 to 2027, the in-wheel motor market will achieve compound annual growth rates (CAGR) of 30.4 percent.

For the last 15 years, Elaphe Propulsion Technologies, a Slovenian company based in Ljubljana, has been at the forefront of in-wheel motor design, manufacturing electric in-wheel motor propulsion systems since 2003. The company's Chief Technology Officer, **Gorazd Gotovac** talks to *WIPO Magazine* about the role that innovation and intellectual property (IP) play in Elaphe's business strategy and its ambitions for the future.

***Tell us about Elaphe and what it does.***

Elaphe develops and manufactures powertrain systems for electric vehicles. We focus on a specific innovative architecture – our high-performance electric motors are placed in, and directly power, the wheels of a vehicle. This type of vehicle propulsion is simple and energy efficient. It also saves space, since in-wheel motors eliminate the need for the complex powertrain systems found in traditional internal combustion engines or electric motors. This makes it possible to completely reconfigure the interior layout of a vehicle and to introduce more user-centric design solutions. The company's R&D center and European manufacturing operations are based in Ljubljana, and we also have a production site in Hangzhou, People's Republic of China. We target global automotive markets and have a range of projects in a number of transportation sectors.

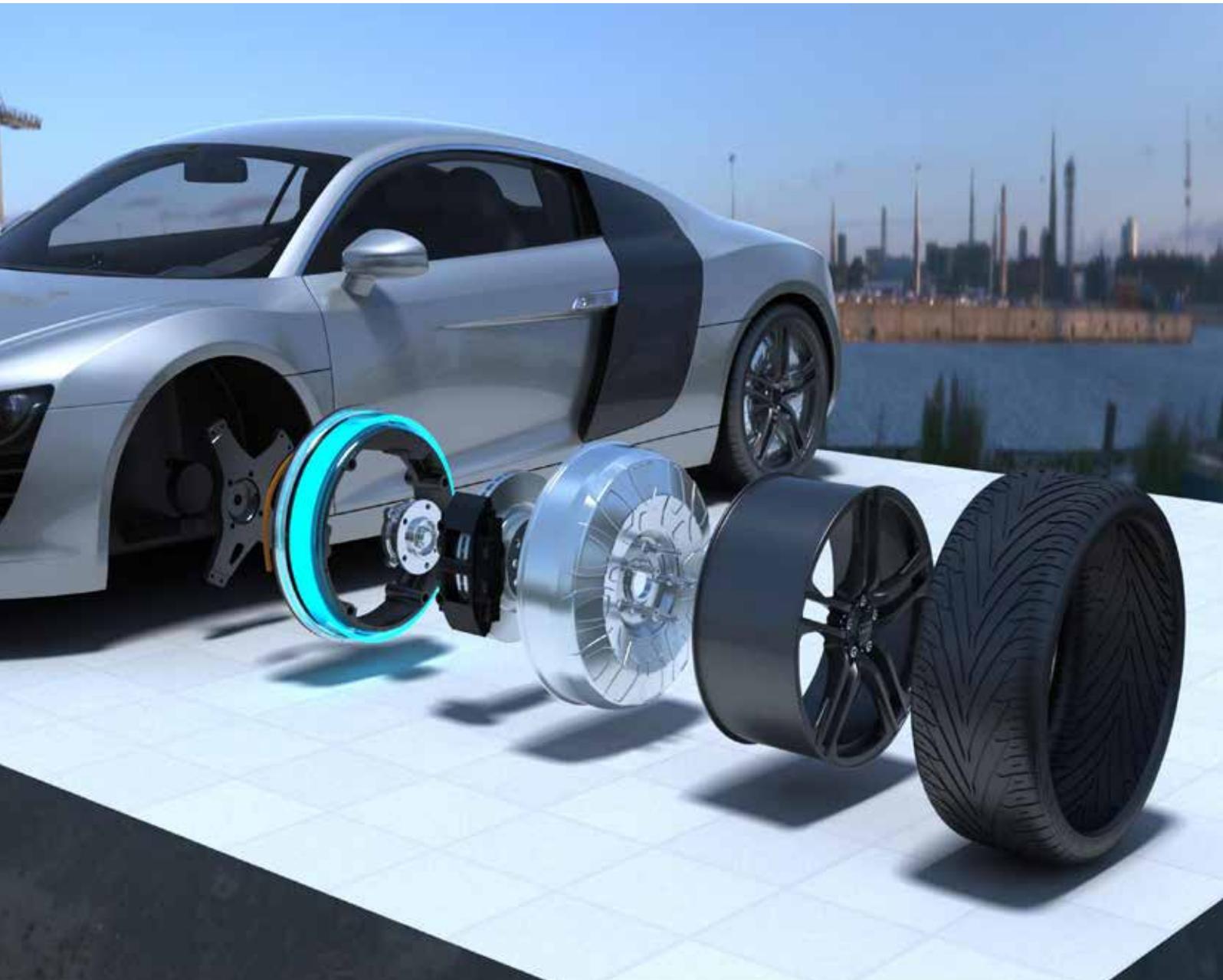
***Ferdinand Porsche is said to be the first person to invent an in-wheel motor back in 1900. What sparked Elaphe's interest in this field and how do you explain the growing interest in in-wheel motors today?***

Ferdinand Porsche's work has been a great inspiration, but we can safely claim that Elaphe is one of the pioneers of passenger car in-wheel motors. It all started in the late 1980s. Our mentor and co-founder Andrej Detela drew his inspiration from nature, in particular the anatomy of animals, and also had good technical reasons to believe his research could be applied to cars and other vehicles in the future. The availability of more robust, new materials (e.g. composites and high-energy density permanent magnets), combined with the belief that it was possible to produce a simple, clean and highly efficient powertrain architecture with very few moving parts, and most importantly, the vision about the potential to change how a car looks, how it is used and how to lower its environmental impact, spurred our commitment to

Photo: Courtesy of Elaphe Propulsion Technologies



In-wheel motors offer many advantages over traditional electric motors. They are light and powerful and small enough to allow for other components to be integrated into the wheel.



Photos: Courtesy of Elaphe Propulsion Technologies



Elaphe's unique in-wheel architecture and control algorithms offer interesting advantages over traditional electric motors. Independent four-wheel drive minus mechanical transmission provides greater stability and responsiveness to road conditions.

IP is central to Elaphe's business strategy and is increasingly important in attracting investors and raising the funds required for the company's expansion.



technological innovation. The initial designs proved the technological concept, so the obvious next step was to set up a company to support the development of this great new technology.

### ***How do in-wheel motors work?***

As a concept, it is very simple: two or four electric motors (depending on whether the vehicle is two-wheel or four-wheel drive) are integrated within the rim of a wheel. Each in-wheel motor is controlled by an on-board powertrain control unit developed by us. That unit controls how the motors behave together. There are no mechanical parts such as gears, differentials or drive shafts; therefore, the vehicle's architecture is much simpler and lighter. There is a great deal of engineering behind the technology. For example, the motor needs to be small, powerful and light, the brake needs to be integrated within the same space as the motor, the motor needs to be able to withstand road and environmental loads, and the control system needs to be able to control each motor for dynamic stability, etc. We have solved these challenges and the system looks really clean and simple.

### ***How is your technology being used?***

Our technology is being used in both automotive and non-automotive applications. It is integrated in a variety of vehicles and a growing number of automakers are either developing vehicles around our technology or evaluating it for the purposes of mass production of new vehicles based on in-wheel powertrain architecture.

### ***What advantages do in-wheel motors have over traditional electric motors?***

In-wheel motors offer many advantages over traditional electric motors. They are light, they save space, they improve vehicle dynamic performance, they allow simpler manufacturing lines and thereby reduce vehicle development and manufacturing costs. They also offer additional environmental benefits. Using fewer mechanical parts makes the vehicles lighter and enables the whole propulsion system to reach high driving efficiency values using a smaller battery to reach similar range.

### ***What specific challenges did you have to overcome to put an engine into a wheel?***

We started off by designing a motor which has the highest torque to weight ratio in the world (i.e. 45 Nm/kg in the L1500 motor). The motor is also really tiny, its active part measuring only 2 x 6 centimeters in cross-section. This design leaves enough space to integrate other components, such as steering, brake discs and calipers, in the wheel. This was a pretty revolutionary development given the power these motors have. When we demonstrated their impressive performance, we focused on making them cost effective, reliable and durable. Then we started developing the control software and electronics to provide functions that go well beyond what people expect from their cars today. Although our in-wheel motor is already a highly sophisticated product and we continue to invest in the electromagnetic design of our electric motor, the company is now focusing more on developing innovative mechanical design, production technologies and control concepts.

### ***There is a lot of talk about self-driving cars. When do you think they will go mainstream?***

We already see several levels of autonomy in cars, so I would argue that, to some extent, self-driving cars are already here. Full autonomy, however, is more elusive and I don't think anyone can give a definitive answer as to when that will become a reality. But I certainly hope that it is sooner rather than later, because, generally speaking, humans are terrible drivers.

### ***Would it be fair to say that Elaphe's technologies are preparing the ground for driverless vehicles?***

We are strongly committed to providing technology for self-driving cars and to support their development through our unique in-wheel architecture and the control algorithms they use. This technology offers interesting advantages. For example, independent four-wheel drive minus mechanical transmission provides greater stability and means a vehicle is more responsive and can react faster to road conditions. The integration of our in-wheel architecture in vehicles offers far greater stability than

can be achieved by a human driver in harsh weather conditions, as demonstrated in our winter testing trials in 2017, 2018 and 2019 in Heihe, Northern China. Our in-wheel motors sense the state of roads and generate other cool data that make self-driving cars a safer travel option.

***What has been the response to Elaphe's technology?***

There has been a lot of interest in our technology since the company began operating, but there is still skepticism, in some quarters, surrounding the technical performance of in-wheel electric motors. We have made it our goal to overcome these concerns. Elaphe's technology is now mature enough to enter the mainstream market. We are working with leading brands in the automotive industry and interest in our technology is ramping up significantly. This is a strong indication of our success. Some parts of the automotive industry are ready to make the leap and reap the advantages of our technology. But our work is not yet done. We want all types of vehicles to use our products!

***What role does innovation play in your company?***

As a technology company, we rely on innovation to secure our competitive advantage. Innovation is at the heart of our business. The concept of our in-wheel architecture is innovative in itself and a significant advance on the work of Ferdinand Porsche in the 1900s. Achieving the same level of performance and reliability as a traditional 1900s combustion engine has proven a challenge and that is where our innovation has played a major role. But our achievements in overcoming these challenges have opened up new opportunities to produce innovative components and algorithms that allow our system to realize its full potential.

***What role does intellectual property (IP) play in the company?***

IP has always been an integral part of our business strategy. Typically, we use it as a defensive mechanism to secure the freedom to operate in this market. More recently, IP has also become central to our funding strategy. As the company has expanded, our ability to attract investors and raise funds has hinged on protecting the vast amount of IP we have developed around our innovations, which in the past, we treated as trade secrets.

**“We are strongly committed to providing technology for self-driving cars and to support their development through our unique in-wheel architecture and the control algorithms they use.”**

Gorazd Gotovac, Chief Technology Officer, Elaphe Propulsion Technologies

***What is your experience of using WIPO's Patent Cooperation Treaty (PCT) and how would you like to see the patent system evolve?***

Elaphe has used the PCT extensively and for several reasons. The process is simple and provides a search report, which can supplement our own research on the state of the art. In a dynamic environment where new innovation is born every day, the timeframe of the PCT process gives us a certain freedom to delay strategic decisions until such time as the market and product information is clearer and the economic benefit of pursuing a patent is easier to evaluate. We are quite happy with the PCT, but in Europe, we would like to see the unitary patent system up and running. That would generate significant cost-savings and make the innovation process more affordable.

***Are partnerships important to the company?***

The automotive supply chain has a huge amount of knowledge on developing and manufacturing parts, so our partnerships are very important. They mean we avoid re-inventing components and technologies that can be produced much more efficiently by others. Our in-wheel motor has around 80 different parts of which around 50 are standard off-the-shelf components. Many of the remaining parts are developed in partnership with the supplier. This often involves making small modifications to their existing products. So partnerships offer many advantages both to Elaphe and our partners. It gives them a foot in the door and an established revenue stream, both of which will be useful when our technology starts pushing older automotive technologies out the door. Partnering with component suppliers is also very important when it comes to influencing the design of our systems. For example, manufacturers of braking systems, suspensions, wheel rims and so forth all bring invaluable insights to the table. And of course, putting appropriate IP arrangements in place is important in ensuring that these partnerships continue to work smoothly.

***What are Elaphe's plans for the future?***

We want to become the "go-to" company for in-wheel motors. The technology's potential has now been confirmed by the market so we are very optimistic that we will become a major global supplier for electric vehicles.

***What do you think cars will look like 10 years from now?***

Good question. I think that the form of the car will change to accommodate the new uses that connectivity brings to the industry. That means lots of space for passengers and screens, personalized interiors, software-defined functions, and advanced automated safety functions, at least for partially-automated driving. We will certainly see a high-performance electric powertrain with functionality that meets user requirements.

***What message do you have for aspiring young inventors?***

Many will tell you "it can't be done" because they heard someone tried and failed. Don't let that stop you. Keep thinking out of the box and test your ideas as quickly as possible. Look at the available proof, examine why a technology failed and use that information to test your approach. After all, the technology we take for granted today "couldn't be done" at some point in the past.

# Worldwide activities on licensing issues relating to standard essential patents

By **Doris Johnson Hines**, Partner, and **Ming-Tao Yang**, Partner, Finnegan, Washington, DC, USA



Photo: Peopleimages / E+ / Getty Images

Technical standards ensure interconnectivity and interoperability of billions of mobile phones and other electronic devices that we use every day. The organizations that set these standards often require owners of patents covering portions of a standard (known as a standard essential patent (SEP)) to commit to license their patents on fair, reasonable and non-discriminatory (FRAND) terms.

Technical standards that ensure device interconnectivity and interoperability cover myriad products in the information and computer technology (ICT) space, from smart phones and tablets, to memory devices and cables. Standards are ubiquitous. Among other things, they allow the world's more than 8 billion mobile devices to communicate with each other and ensure users can access and operate the world's more than 2 billion computers.

Standard setting organizations, which promulgate technical standards, often require owners of patents covering portions of a standard, called standard essential patents (SEPs), to commit to license their patents on fair, reasonable and non-discriminatory (FRAND) terms.

This year presents fresh opportunities for implementers of standards-related technologies to potentially reduce the

cost of entering into standards-related licenses, the burden of resolving SEP-related disputes, and, under certain circumstances, the risk of an injunction. New opportunities exist for SEP owners as well, as standards cover more and more technologies.

For over a decade, SEP owners and standards implementers, whether they are large or small businesses, have wrestled with various challenges relating to licensing SEPs. They have struggled with negotiating licenses, seeking (or avoiding) injunctions, determining FRAND royalties, avoiding discrimination, and seeking recoveries for a SEP owner's breach of FRAND commitments or the refusal of an implementer to accept FRAND terms. And the landscape has become increasingly complex as standards-related technologies – ranging from wireless and wired communications to video and audio streaming; from block-chain or other security mechanisms to health-data sharing; and from artificial intelligence (AI) to robotics – expand beyond the Internet of Things (IoT) and into other areas. Recognizing this, government agencies around the world have been considering these issues and converging on approaches to SEP licenses and FRAND royalties by focusing on balance, transparency and reasonableness. This convergence sparks opportunities for securing licenses or cross licenses that reflect one's unique circumstances. However, even with FRAND, not all licenses are created equal.

The United States Department of Justice (DOJ), the European Commission (EC), the High People's Court of Guangdong, People's Republic of China and the Japan Patent Office (JPO) have provided guidance on approaching questions relating to SEP licenses. While areas of divergence remain because law, policy, economic considerations and technological maturity differ by country, these regions are converging in many areas on approaches to SEP and FRAND issues.

This convergence, as well as knowledge of regional differences, presents skilled SEP negotiators with new opportunities. Business models, markets and market positions may matter more than ever in approaching SEP and FRAND issues, in part because those similarly situated will generally obtain similar rates and terms under FRAND. Therefore, businesses that can emphasize similarity or exploit differences are well-positioned to obtain more favorable royalty rates and license terms. The expected clarity, transparency and preference for alternative dispute resolution mechanisms, such as mediation or arbitration, also equip parties with additional tools to resolve SEP issues quickly and effectively.

#### **NEW DIRECTION IN THE UNITED STATES: BALANCED INTERESTS WITH FEWER RESTRICTIONS ON INJUNCTIONS**

The United States DOJ recently discussed a new approach to SEPs and FRAND, particularly with respect to injunctions (whether to enjoin sales of standards-implementing products in the United States), which the DOJ's 2013 statement disfavored. In December 2018, the Antitrust Division of the DOJ withdrew its 2013 statement, including its limitation on injunctions in the SEP context. While new guidance is reportedly being developed and is not yet available, on several occasions in 2018 the DOJ signaled its revised view that injunctions should be more available in the SEP context. The contours of this new approach remain to be seen, but the DOJ has emphasized balancing the interests of implementers and SEP owners. By withdrawing the previous guidance that injunctions should not be available in the FRAND context, however, the DOJ's new

narrative seems consistent with its increasing efforts to guard against unauthorized use of U.S. intellectual property rights. Making injunctions more available will likely empower SEP owners, forcing unwilling licensees (who “hold out” on SEP owners by refusing to accept a FRAND license offer) to choose between being excluded from the U.S. market and taking a license to continue selling.

While the new, not-yet-released statement from the DOJ may benefit SEP owners in lifting certain restrictions over injunctions, the DOJ also emphasized the need for clarity, predictability and balanced interests. Additionally, because standard-setting processes frequently involve joint efforts among large players in the same industry who often compete against each other, the DOJ also voiced its concerns over potential collusion among competitors through standard-setting activities. While increasing threats of injunctions would likely put pressure on implementers, an increasing focus on balance, clarity and predictability may also reduce transactional costs for implementers. Therefore, both standards-promoters and implementers must monitor closely the statement the DOJ will release soon and navigate carefully in this new era.

#### **EFFICIENCY DRIVES EUROPEAN COMMISSION'S SEP LICENSING PRINCIPLES, WITH NEW EXPERT GROUP TO ASSIST**

The EC issued its latest approach to SEPs at the end of 2017 and created an expert group on the licensing and valuation of SEPs in the summer of 2018. The EC approach aims to foster an efficient, balanced, smooth and predictable framework, reflecting its goals to incentivize technological development and widespread use of technology standards.

To increase efficiency and facilitate negotiations, the EC called on standard-setting organizations to improve transparency, quality and accessibility of information relating to SEPs. The EC pointed out that SEP owners often over-declare (declaring patents as essential to a standard when they are not). Generally, such organizations do not assess whether patents are actually standard-essential. This lack of scrutiny can make such declarations unreliable. In addition, most standard-setting organizations provide no platform for searching SEPs or for providing license, royalty, litigation or other SEP-related information. As a result, there are hurdles to transparency in SEP license negotiations. Raising and elaborating these concerns, the EC seems to favor imposing new requirements on standard-setting organizations, which may be in the best position to remove or lower these hurdles.

FRAND license terms may not be universal. Instead the royalty rate and other license terms can differ from sector to sector, region to region, and over time. In fact, FRAND

“The world is considering, and in many ways, converging on, how to negotiate SEP licenses with FRAND royalties... However, even with FRAND, not all licenses are created equal.”

terms may differ from company to company. While FRAND license terms include “non-discrimination,” this applies to so-called “similarly-situated” licensees. Imposing FRAND terms on such entities and thus permitting deviations in FRAND terms among those not similarly-situated, means that SEP holders and implementers can assess the unique circumstances of a particular potential licensee to differentiate it from other licensees. There are, therefore, opportunities to leverage unique circumstances and still arrive at FRAND license terms.

The EC pronounced that FRAND should be determined based on considerations such as efficiency, reasonable expectations of SEP owners and implementers and widespread use of standards. Acknowledging that FRAND terms are frequently disputed, the EC encourages using alternative dispute resolution mechanisms, such as mediation and arbitration, to reduce transaction costs. The EC formed a 15-member SEP expert group in July 2018. That group aims to further assist the EC’s development of SEP license practices, facilitate FRAND determinations and develop additional policies.

Noting that injunctions are governed by each Member State that implements the European Union Directive on the Enforcement of Intellectual Property Rights (IPRED), the EC did not specify any particular test, but suggested that injunctive relief should be effective, proportionate and dissuasive. It also referenced the framework announced by the European Court of Justice (CJEU) in its 2016 *Huawei v. ZTE* decision. Suggesting that this decision is not the exclusive framework, the EC emphasized the need to conduct a proportionality assessment on a case-by-case basis, leaving substantial discretion to courts.

While patents are secured country by country and can only be enforced in the country in which granted, the EC views worldwide SEP licenses as efficient and compatible with FRAND. However, because patent law, damages



SEP owners and standards implementers have long wrestled with challenges relating to licensing of SEPs. Recognizing that standards-related technologies are expanding beyond the Internet of Things and into other areas, government agencies around the world are considering these issues by focusing on balance, transparency and reasonableness.

doctrines, SEP portfolios and other considerations differ by country, it is not uncommon for a worldwide SEP license to set different rates by country or region. With regional differences, businesses can leverage lower regional rates and license (or cross license) terms that may be unique to their business model and market.

#### **FAULT-BASED APPROACH IN CHINA'S 2018 SEP GUIDELINES**

China's High People's Court of Guangdong also recently issued SEP guidelines. They detail how local courts resolve SEP-related disputes, including how they determine FRAND royalty rates when certain conduct violates China's anti-monopoly law, and, importantly, the circumstances that will result in an injunction. Like the EU's approach, China's guidelines emphasize the balance of interests among SEP holders, licensees and the public in making these determinations.

The China guidelines, however, largely disfavor injunctions. Under the guidelines, courts should grant injunctions only when the implementer is clearly at fault and the SEP holder is not (or is relatively less at fault). Using several example scenarios to illustrate when injunctions are/are not available, the China guidelines offer some clarity on this important issue. These examples suggest that an infringer's apparent bad faith, or at least some indication of bad faith, must be present to justify an injunction.

To determine royalties, the China guidelines favor a top-down approach by which royalties are computed on the basis of the number of SEP patents an owner has relative to

the total number of SEP patents, adjusted by comparable licenses. While the guidelines leave it open for courts to use other methods, the prescribed approach will likely dominate.

#### **NEW GUIDE FROM THE JAPAN PATENT OFFICE PROVIDES NEUTRAL, DETAILED, PRACTICAL GUIDANCE**

In June 2018, the JPO issued its guide on SEP and FRAND issues. Addressing SEP negotiations, the guide provides practical guidance for license negotiations, as well as a comprehensive analysis of SEP and FRAND issues and how courts around the world have addressed them. Benefiting from a convergence of decisions and policies around the world on key issues, the guide provides both SEP owners and implementers with a structured framework and an action plan for negotiating SEP licenses. The detailed step-by-step action plans and the JPO's discussion of the reasoning behind resolving FRAND disputes can be particularly insightful for businesses new to SEPs. While non-binding on Japanese courts, it offers a practical, measured approach for those seeking to understand SEPs, negotiate FRAND and make informed and balanced decisions.

#### **FRAND FOR ONE IS NOT FRAND FOR ALL**

While recent action by government agencies around the world on SEPs and FRAND differ, they also converge on some key areas. Most make FRAND a balanced determination, approach SEPs with an aim for clarity and transparency and seek to help businesses achieve certainty. However, FRAND remains a no-one-size-fits-all or fixed number. As FRAND ("fair, reasonable, and non-discriminatory") implies, skilled negotiators can creatively leverage their own business, market and product uniqueness. SEPs, FRAND, injunctions and license terms are not just legal issues; they involve well-informed business strategies and competitive decisions. Decision makers familiar with these developments, both the converged views and continued divergence, may be able to reduce transaction costs and come to mutually-agreeable FRAND terms based on their own unique circumstances. Practicality, flexibility and business reality remain critical considerations for pursuing unique, beneficial and smart licenses. FRAND for one is not FRAND for all – at least not anymore.

# Eurasian Patent Office set to extend the scope of its operations

By **Catherine Jewell**,  
Communications Division, WIPO

Photo: Courtesy of EAPO



Saule Tlevlessova, President of the Eurasian Patent Office (above) notes that the proposed new Eurasian industrial design system “will enable businesses to quickly and easily protect their commercially valuable designs in multiple markets by filing a single application.”

On the eve of the 25<sup>th</sup> anniversary of the entry into force of the Eurasian Patent Convention (EAPC), and the establishment of the Eurasian Patent Organization (EAPO), the EAPO’s CEO and President of the Eurasian Patent Office, Ms. Saule Tlevlessova talks to *WIPO Magazine* about the organization’s recent achievements and its future priorities.

## ***When was the EAPO established?***

The EAPC, which created a unitary patent system for the Eurasian region, entered into force on August 12, 1995. That convention provided for the foundation of the EAPO, of which the Eurasian Patent Office (Eurasian Office) is a constituent part. The Eurasian Office began operations on January 1, 1996 and has a staff of 200 professionals and patent examiners.

## ***What is the role of the Eurasian Office?***

The Eurasian Office offers high-quality patent services to protect inventions and is responsible for administering the Eurasian patent system. It is an independent, regional patent body headquartered in Moscow in the Russian Federation. The Eurasian patent system is a simple and cost-effective way for applicants to obtain patent protection in all eight EAPO member states by filing a single Eurasian patent application. EAPO member states are: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan and Turkmenistan.

The Office also supports the development of the national patent systems within the region. For example, the professional development of staff in national patent offices is one of our top priorities. EAPO also actively promotes intellectual property (IP) awareness and strategic use of patents to boost business growth and economic performance across the region.

### ***Who uses the Eurasian patent system?***

Inventors and businesses from more than 120 countries use the Eurasian patent system. In 2018, we processed 3,488 applications (up 6 percent on 2017), and granted 2,630 patents. As in previous years, the United States, the Russian Federation and Germany accounted for the largest number of Eurasian patent grants. These results underscore the global appeal of the Eurasian system and its importance to the region.

### ***What are the advantages of the Eurasian patent system?***

The system's unitary nature is its main advantage. Once granted, a Eurasian patent is valid in all EAPO member states. The system eliminates the need to file individual applications or to have them examined separately in each EAPO member state. The system is flexible and user-friendly, particularly in terms of amending an application during examination, the restoration of rights lost because an applicant failed to meet certain time limits, and the time it takes to grant a Eurasian patent.

Applicants can also evaluate their chances of obtaining a patent before paying all the fees associated with patent grant. A filing fee is paid at the beginning of the process to cover the cost of the patent search – which enables them to evaluate the patentability of their technology – and the application's publication. Only when they decide to move forward with their application, do they pay fees for substantive examination, grant and publication of the patent.

The Eurasian system also administers an opposition procedure if the granted patent is challenged and other procedures to allow applicants to appeal Office decisions. It also provides a full range of high-quality patent information services, including the Eurasian Patent Information System (EAPATIS) (see box).

### ***How has the Eurasian patent procedure changed in recent years?***

The Eurasian patent system is constantly evolving. Our goal is to provide applicants and patent owners with high-quality, cost-effective, user-friendly and efficient patenting services. We recently amended our patent legislation to bring it into line with international best practice. These measures ensure the quality of patent examination and Eurasian patent grants remains high and also makes the system and its procedures more flexible, especially with respect

## **About the Eurasian Patent Information System (EAPATIS)**

Established in 2000, EAPO's EAPATIS now contains more than 75 million patent documents and is linked to more than 10 patent information databases, including WIPO's PATENTSCOPE.

EAPATIS is designed to improve efficiency and quality of patent searches and patent information and to support the examination of patent applications. It is available free of charge for EAPO national patent offices and in many libraries, university and science and technology centers across the region.

to the restoration of rights, which is good news for applicants. We have also introduced a new procedure that allows third parties to submit observations on the patentability of inventions at the examination phase. This will make EAPO patents even more robust.

Progress has also been made in processing times. We have shortened average processing times by 20 percent, saving around 90 days per application in providing the first feedback on the patentability of the invention. And the backlog in applications pending substantive examination has fallen by 31 percent.

We also recently launched a pilot program to fast-track substantive examination of international applications filed under the PCT entering the EAPO regional phase. This and other similar arrangements are also making the Eurasian system more efficient.

Our work in each of these areas will continue.

#### ***What are the EAPO's priorities in the short-term?***

The focus of the last 25 years has been on establishing the EAPO and ensuring users have access to efficient, cost-effective and user-friendly patent services. In this respect, we have a very successful track record. Given the increasing importance of IP rights in securing business value, the time is now ripe to extend the scope of EAPO's operations and to establish a legal protection system for industrial design rights that allows businesses to protect their commercially valuable design assets.

We have been working towards this goal since 2017, with the backing of the EAPO's Administrative Council. And with the invaluable support of WIPO and other partners, we have made rapid progress. A draft international treaty to establish a new regional system of legal protection for industrial designs was approved by EAPO's Administrative Council in October 2018 and will be submitted for adoption by EAPO member states at a Diplomatic Conference in Astana, Republic of Kazakhstan, later this year.

#### ***Why is this move important?***

It is important for three main reasons. First, the EAPC and the prospective new design treaty are the only examples of successful

**“The time is now ripe to extend the scope of EAPO's operations and to establish a legal protection system for industrial design rights.”**

Saule Tievlessova, President of the Eurasian Patent Office (EAPO)



Photo: Courtesy of EAPO

Mr. Shen Changyu, Commissioner of the China National IP Administration (CNIPA) and EAPO President Saule Tlevlessova (above). With a view to further improving its services, the EAPO has signed a number work-sharing agreements with large IP offices, including CNIPA, the European Patent Office (EPO), the Japan Patent Office and the Korean IP Office (KIPO).

cooperation in the field of IP among the countries of the Eurasian region over the past 25 years. The region's IP community is keen to develop the region's IP landscape, in particular in relation to the protection of industrial designs.

Second, the proposed new regional industrial design system will enable businesses to quickly and easily protect their commercially valuable designs in multiple markets by filing a single application.

And third, it is an important next step in creating a more favorable IP landscape and broader use of IP across the region. This promises to boost domestic markets and enhance the flow of trade and investment to the region.

#### ***Are there any other immediate priorities?***

Strengthening our relations with regional and international partners is another important priority. Engagement with national IP offices in the region for enhanced office

automation and professional development remains a top priority. We are also further improving our services by working with other IP offices to establish work-sharing arrangements. So far, we have signed Patent Prosecution Highway (PPH) Agreements with the China National IP Administration (CNIPA) and the European Patent Office (EPO) – these launched in October 2017 and April 2018 respectively; a similar agreement with the Japan Patent Office has been extended to February 2021; and in September 2018, we signed a PPH agreement with the Korean IP Office (KIPO) that took effect in January 2019.

These arrangements mean that inventors and businesses in the countries and regions covered can obtain patents more quickly via a fast-tracked route. As examination outputs are shared between offices, the grant process is faster and the chances of a positive grant decision are higher. These initiatives highlight mutual confidence in the examination approaches and quality of participating offices.

**“The EAPO will continue to play an active and constructive role in shaping the regional and, indeed, the global IP landscape.”**

Saule Tievlessova, President of the Eurasian Patent Office (EAPO)

EAPO headquarters in Moscow. The EAPO began operations on January 1, 1996. An independent, regional body, it is responsible for administering a unitary patent system for the Eurasian region.



## About WIPO CASE

WIPO CASE enables patent offices to securely share search and examination documentation related to patent applications in order to facilitate work sharing programs.

Many patent applications are filed in multiple offices and patent examiners can increase the efficiency and quality of their work by sharing their examination results.

WIPO CASE seeks to improve the quality and efficiency of the patent search and examination process done at local and regional patent offices. The time taken for examination work can be reduced and quality of search results can be improved by work sharing. Participating offices can carry out further search and examination work if deemed necessary after analyzing existing information of any equivalent filing at another participating patent office.

Thirty-three offices, plus the EAPO and the EPO, currently participate in WIPO CASE. Any patent office may join the system.

### *Is the EAPO going digital?*

The EAPO is committed to providing our applicants with the most up-to-date services. We have long recognized the advantages of automation and continue to roll out paperless workflow technologies. In 2018, the number of applications filed via the EAPO-ONLINE e-filing system rose above 80 percent. Almost 50 percent of all transactions with applicants during the examination phase are fully paperless. And since 2016, our internal operations have been paperless thanks to our internal electronic dossier system.

In June 2016, the EAPO joined WIPO's centralized access to search and examination (CASE) system (see box). And in November 2017, we began using the WIPO Digital Access Service (DAS), an electronic system that allows the secure exchange of certified patent applications between participating IP offices. These services generate additional efficiencies and mean we can offer local applicants a new low-cost service to help them in filing their patent applications in countries outside the region.

### *How do you see the Eurasian patent system evolving in future?*

The EAPO will continue to play an active and constructive role in shaping the regional and, indeed, the global IP landscape, to help create the conditions for businesses to compete and thrive in international markets. Data show there is significant scope for applicants from countries experiencing rapid economic growth outside the region – I am thinking, in particular, of South East Asian countries – to protect their IP assets in the Eurasian region. That is why we are redoubling our efforts to familiarize inventors and businesses in those countries with the advantages of the Eurasian patent system.

Regional cooperation on IP is also gaining momentum, so we expect the scope of our operations to grow. At the administrative level, our first priority will be to introduce procedures to protect industrial designs. We also plan to expand the number of work-sharing arrangements with IP offices around the world to ensure users have access to high-quality patenting services. We will continue to monitor opportunities to integrate artificial intelligence and machine learning into our procedures and systems. While these rapidly-evolving technologies promise to generate additional efficiencies, the professionalism of our examination staff will remain central to our work. Our investment in their continuing professional development will ensure they are effective in assessing the most complex emerging technologies, thereby ensuring the EAPO continues to meet the evolving needs of users.

# Protecting rainforest-derived technology equitably

By **Jorge A. Goldstein**, Senior Director,  
Sterne, Kessler, Goldstein & Fox PLLC,  
Washington DC, USA

Indigenous peoples known as the Emberá live in the rainforests of Colombia. The Emberá, traditionally semi-nomadic hunter-gatherers, have lived in the Chocó region at least since the sixteenth century. They co-exist with Afro-colombian communities that settled the same territory from the colonial period when they were brought as slaves for mining operations. More recently, the construction of the Pan-American highway, mechanized illegal mining and large-scale deforestation have encroached on the lives of these communities. Having lost their precious forests, many become subsistence farmers or employees in non-sustainable activities.

One of the Emberá joys is body painting. For as long as records show, they, and the Afro-colombian communities with whom they co-exist, have used the dark blue juice of the fruit from the jagua tree (*Genipa americana*) to decorate themselves for rituals, ceremonies, or just for fun.

In the early 2000s, a privately-funded Colombian company, Ecoflora Cares, working with an organic chemist from a local university in Medellín, extracted the active ingredient from the blue juice of the jagua fruit and, through a novel process, developed a stable and free-flowing powder. The powder has a beautiful cobalt-blue color.

Ecoflora wished to commercialize the powder, but in a way that would respect the sustainability of the fruit and benefit the local communities from which it originated. Therefore, in the spirit of the Convention for Biological Diversity and the Nagoya Protocol (CBD/Nagoya), Ecoflora worked with national and local government and various non-governmental organizations (NGOs), to create a business and regulatory network that would allow them to ethically source the fruit and develop the blue powder for use as an additive for foods, drinks and cosmetics. They entered into agreements with several Emberá community groups to produce the jagua fruit for commercial partners. Through a benefit sharing agreement, these Emberá suppliers share in benefits (both monetary and non-monetary) of any commercialization of the jagua-derived blue powder and its application.

About seven years ago, Ecoflora approached our law firm for help in obtaining patents on the blue powder and its applications. They had learned of the firm's *pro bono* program through Public Interest Intellectual Property Advisors (PIIPA), an NGO based in Washington, DC, that connects intellectual property (IP) *pro bono* lawyers with potential clients worldwide.



Bodypainting is deeply embedded in the traditions of the indigenous peoples known as the Emberá, who live in the rainforests of Colombia. The Emberá use the dark blue juice of the fruit of the jagua tree to decorate themselves for rituals, ceremonies or just for fun.



Photo: Ecoflora Cares / Alejandra Gómez Vázquez

In the early 2000s, Colombian company Ecoflora Cares successfully created a safe blue powder additive from the juice of the jagua fruit for use in edibles, cosmetics and medicines. The company has signed various agreements to ensure the Emberá share in any benefits derived from the commercialization and application of its jagua-derived blue powder.

## WIPO's work on access and benefit sharing

Addressing the use of IP tools to support innovation and contribute to economic growth and poverty reduction, WIPO's Traditional Knowledge Division organizes, with the Swedish Patent and Registration Office and with the support of the Swedish International Development Cooperation Agency, an international training program for African and Asian institutions. These institutions include research centers, IP offices and other government departments, industry and small-holder, and commercial farmers. WIPO's *Guide to Intellectual Property Issues in Access and Benefit-sharing Agreements* is one of the Division's practical tools. The guide is complemented by a searchable database on biodiversity-related access and benefit-sharing agreements available on the Division's webpages ([www.wipo.int/tk/en/](http://www.wipo.int/tk/en/)).

### THE FIRM'S PRO BONO PRACTICE

Sterne Kessler's *pro bono* practice is inspired by the idea of redeeming economic, social and cultural rights through IP. We help disenfranchised communities benefit from their creations by gaining commercially important IP rights and using them to advance their economic, social and cultural rights – that is, jobs, healthcare, shelter and food – in line with the United Nations Covenant on Economic, Social and Cultural Rights (Article 15 (1)) of 1976.

We believe that impoverished and underrepresented communities from the developing world can use IP rights to benefit from the commercialization of their products in advanced, predominantly northern, markets. The aim is to reverse the traditional flow of technology from the North to the South with associated revenues flowing northwards, and to ensure that when technology from the South flows to the North, the associated revenues flow back to the communities from which the base resources originated. We think of this as a sort of “reverse technology transfer.” On the strength of the work we have done around this simple concept, in 2015, the *Financial Times* of London gave the firm's *pro bono* program its “Most Innovative North American Lawyers Award for Innovation in a Social Responsibility Project.”

When, in 2011, we looked into the Ecoflora blue color proposal, we knew that we had found a worthy project. While the use of juice of the jagua fruit for body painting originated with the tribe, the development of a stable blue powder was not the invention of any one member of the Emberá. Protecting Ecoflora's creation of a stable blue powder also allowed us to leapfrog over another issue that arises often with direct representation of a tribe. Tribal property, including collective know-how, is treated communally, not individually. The patent systems of the world, however, require the naming of individual inventors. This is a problem when dealing with communal IP. Thus, focusing on a downstream invention developed by a university chemist and owned by a private company simplified matters. And, since Ecoflora was abiding by CBD/Nagoya, we felt that representing the company, for the benefit of the community, was a worthwhile endeavor. We rolled up our sleeves and went to work.

### OBTAINING PATENTS

We have since submitted patent applications across the globe via WIPO's Patent Cooperation Treaty; see, for example, PCT/IB2014/001735. The applications cover Ecoflora's blue-colored powder, its detailed chemical composition, its manufacture, and its use in the production of consumer products, such as foodstuffs, personal care goods, or medicaments. Several patents have issued; see, for example, U.S. Patent No. 9,376,569. Our client now has patent protection in tropical countries, such as Brazil, Costa Rica and Peru, where the jagua tree may grow and where the production methods may be used; as well as in the United States and Europe, where the substance may be used to color foods and drinks.



To let the world at large know that Ecoflora will commercialize a blue powder derived from a rainforest genetic resource, it voluntarily included in issued U.S. patents a "Statement of Access and Benefit Sharing." The statement explains that the sourcing and commercialization involving this resource comply strictly with the principles of the Convention for Biological Diversity and the Nagoya Protocol.



Photo: Yves Ploq CC BY-SA 3.0 (<http://veton.picq.fr>)

While the United States has not signed up to the CBD/Nagoya, many of the countries in which we have obtained patents for Ecoflora have done so. Therefore, in order to let the world at large know that Ecoflora will commercialize a blue powder derived from a rainforest genetic resource, we voluntarily included in issued U.S. patents a “Statement of Access and Benefit Sharing.” The statement explains that any sourcing or commercialization of the resource must comply strictly with the principles of CBD/Nagoya.

In parallel, Ecoflora started testing the powder extensively to obtain regulatory approval for its use in edibles, cosmetics and medicines from the United States Food and Drug Administration and similar entities. These regulatory efforts are well on their way to completion, with encouraging results.

### DOING DEALS

Ironically, filing and obtaining patents, and undertaking testing to obtain safety approvals, have turned out to be the easier parts of the project. More difficult has been the task of convincing some of the world’s major food additive companies to partner with Ecoflora to bring blue foods and drinks to international markets.

It is not that these companies were skeptical about adding blue to edibles – quite the contrary. The food industry has referred to Ecoflora’s blue as the “missing holy grail.” Blue is scarce in nature and hence there is a dearth of safe blue coloring for foods and drinks. This is especially the case with respect to carbonated drinks, which are acidic (typically with a pH of 3 to 4), and in which most existing blue additives break down. So, the food industry has been searching for a stable blue color that would have a long shelf-life in fizzy drinks for some time. Ecoflora’s jagua blue powder meets their requirements. Its active ingredient does not easily degrade at the pH of sparkling drinks. Nor did the companies have any problem with testing for regulatory approvals, the patent protection we had obtained, or the need to comply with the CBD and the Nagoya Protocol. Their problem was, let’s say, cultural.

The idea of “reverse technology transfer” was new to them and they were skeptical. The idea of paying for a Colombian technology derived from indigenous peoples seemed foreign. Several offered to buy the fruit outright but were unwilling to license the IP. In spite of such resistance, we continued our efforts in the firm belief that IP is a great equalizer, and would give indigenous communities negotiating power they had never had.

In 2017, we helped our client organize a worldwide virtual auction, using our firm’s servers in Washington, DC, as an extranet where we placed several dossiers of information. After the companies paid an access fee and signed non-disclosure agreements, we gave each of them a unique password, and they received access to several databases: regulatory and patent information; process trade secrets; a model supply and licensing agreement; and projected business models.

After evaluating 12 offers of interest, Ecoflora signed a deal with a major European concern in the form of a supply and IP licensing agreement under which Ecoflora will receive compensation for the sale and distribution of the blue powder used in foods and beverages. The legal and contractual groundwork laid out under the CBD and the Nagoya Protocol assures that the Emberá community suppliers will also receive benefits.

## THE BIG PICTURE

The jagua blue deal is the culmination of almost eight years of legal work and intense negotiations by a team made up of our *pro bono* group and our client. It is premature to conclude whether the project will achieve the success we hope for. A project like this is built one brick at a time. Each brick is a significant, although small, success: establishing a CBD/Nagoya framework; obtaining patents; obtaining regulatory approval; finding the right multinational company to do the deal; and negotiating and executing an agreement that respects the IP of a small South American company driven by a determination to benefit indigenous communities and their beloved rainforest.

Only time will tell if this groundwork will be sufficient to improve the lives of the Emberá. But the seeds have been sown.

What this project also shows is the value of pragmatic, practical approaches to what is a vexed area of IP policy-making. It should be noted that WIPO’s Traditional Knowledge Division supports continuous international negotiations on these issues; it also provides practical capacity-building assistance to indigenous and local communities as to how they can make smart and effective use of IP tools and negotiate fair contracts.

I venture to guess that the Emberá don’t really care whether their drinks are colorless or blue, sparkling or plain. They probably shake their heads at the notion that consumers in the United States or Europe would spend money to buy a blue fizzy cold drink in order to “hydrate.” Maybe someday, when they see the benefits that flow to them from the sale of blue pop drinks in New York or Paris, they will – fortunately or unfortunately – care. Such are the ways of the modern world.

# An expanding role for IP Offices in alternative dispute resolution

By **Leandro Toscano** and **Oscar Suarez**,  
WIPO Arbitration and Mediation Center

A startup finds out that another company is using its patent-protected invention without permission. Two small companies are fighting over a trademark and are locked in opposition procedures before an IP Office. A software developer is negotiating a contract to develop a mobile application with a company based in a different country and is eager to avoid potential future disputes. What can these IP stakeholders do to protect their interests?

They could go to court to resolve their differences, but litigation tends to be expensive, time-consuming, and often lacks IP specialization; also, court litigation is adversarial, hindering business relations between the parties. Or they could opt for voluntary alternative dispute resolution (ADR) procedures, such as mediation and arbitration, which are gaining popularity as means of settling IP disputes and reducing negative fall-out. In collaboration with the WIPO Arbitration and Mediation Center (WIPO Center), a growing number of national IP and Copyright Offices are gearing up to bring the advantages of ADR to their IP stakeholders.

So how exactly can IP Offices contribute to reducing the impact of disputes arising in innovation and creative processes?

In 2015, WIPO produced a *Guide on Alternative Dispute Resolution for Intellectual Property Offices and Courts*. The guide captures the WIPO Center's growing experience in the area of ADR and offers practical guidance notably to IP Offices seeking to integrate and promote ADR options in their portfolio of services. A substantially updated edition of the guide was published in 2018.

## WIPO Mediation Pledge

In November 2018, the WIPO Center launched the WIPO Mediation Pledge for IP and Technology Disputes. While the Pledge is not a binding commitment, it demonstrates a signatory's willingness to consider mediation when resolving its IP and technology disputes. In this way, it promotes the use of mediation to help reduce the impact of disagreements in innovation and creative processes, a benefit which mediation cases administered by WIPO have demonstrated in practice. As noted by WIPO Director General Francis Gurry, "mediation helps parties to save time and costs and to get on with their business."

The Pledge has already attracted more than 200 signatories from over 70 countries, notably IP producers and practitioners. Various institutions, including IP Offices and industry associations, are also promoting this initiative.

The complexity of IP disputes is often compounded by the involvement of parties from different countries and of IP rights that are territorial in nature. ADR is tailored to these conditions and, where IP Offices are involved, contributes to the efficient use of public resources. For example, ADR may allow parties to settle trademark opposition cases before resources are used by an IP Office to issue a decision.

#### **RAISING AWARENESS OF ADR OPTIONS**

The WIPO Center collaborates with IP Offices in a number of ways. Increasingly, for example, IP Offices around the world are raising awareness about the advantages of ADR. This may include developing country-specific information materials for interested parties concerning ADR options, or offering joint information and practical training events on mediation and arbitration for IP and related disputes. Or it might involve referring inquiries they receive from parties to the WIPO Center for further assistance (notably in infringement cases). The WIPO Center is available to assist parties that wish to commence a WIPO ADR proceeding as an alternative to court litigation. This could take the form of parties using a WIPO model contract clause or invoking, through a unilateral Request for Mediation or otherwise, the WIPO Center's Good Offices services to facilitate direct settlement between parties or the submission of a dispute to mediation or arbitration. Examples of IP Offices ADR aware-ness raising are:

##### **IP Australia**

In January 2017, IP Australia and the WIPO Center launched an initiative to provide ADR options for the resolution of IP and technology disputes in Australia. This service offers Australian businesses improved access to mediation, arbitration and expert determination, and enables parties to settle international IP disputes in a time- and cost-efficient manner. To this end, the WIPO Center makes available to interested parties online communication options, including an online docket and videoconferencing facilities, at no cost.

##### **Mexican Institute of Industrial Property (IMPI Mexico)**

IMPI Mexico and the WIPO Center entered into a cooperation agreement in September 2014 to raise awareness and promote the use of ADR for IP and technology disputes in Mexico. Since then, IMPI Mexico and the WIPO Center have worked in close collaboration to explain the advantages of ADR to IP stakeholders in Mexico, including multinational companies, small and medium-sized enterprises, startups, universities, inventors and entrepreneurs. Examples of activities include seminars, webinars and workshops, in collaboration with Mexican IP associations, and awareness-raising campaigns via social media channels.

In collaboration with the WIPO Arbitration and Mediation Center, a growing number of IP and Copyright Offices are gearing up to bring the advantages of ADR to their IP stakeholders.



Photo: Peopleimages / E+/ Getty Images

## CASE ADMINISTRATION

Another key area of collaboration is case administration. Some IP Offices develop or encourage the use of ADR in the context of proceedings pending before them, most notably, trademark opposition proceedings. Collaboration with the WIPO Center may include the administration of cases submitted by parties to ADR under such schemes by the WIPO Center. Examples of ADR case administration are:

### **Intellectual Property Office of Singapore (IPOS)**

Under its collaboration with IPOS, the WIPO Center has participated in the development of a mediation option for trademark and patent proceedings, and an expert determination option for patent proceedings pending before IPOS, and administers such proceedings. IPOS also offers a mediation promotion scheme to encourage parties in IPOS proceedings to choose mediation as an alternative to a hearing. The scheme funds certain costs incurred by parties in a mediation procedure, regardless of the outcome.

#### **Case example: A WIPO mediation of trademark opposition proceedings at IPOS**

A Singaporean medical service provider filed an opposition with IPOS against the application for the registration of a trademark by a Malaysian company, alleging similarity of color and other features to its trademark. The parties agreed to submit the dispute to WIPO mediation in Singapore. The WIPO Center proposed a Singaporean IP lawyer as mediator. After a day of intense negotiations, the parties reached a settlement under which the applicant agreed to file a new application on agreed terms.



Litigation tends to be expensive, time-consuming and can hinder business relations between parties. Voluntary alternative dispute resolution procedures, such as mediation and arbitration, are gaining popularity as a means of settling IP disputes.

### **Intellectual Property Office of the Philippines (IPOP HL)**

Mediation is mandatory for certain types of IP disputes administered by IPOP HL. For example, for administrative complaints about violation of IP rights and/or unfair competition; *inter partes* cases, such as trademark opposition and cancellation proceedings; disputes involving technology transfer payments; and disputes relating to the terms of a license involving an author's rights to public performance or other communication of their work. The WIPO Center collaborates with IPOP HL in the administration of international mediation proceedings involving IP rights in the Philippines.

### **Patent Office of the Republic of Poland (PPO)**

In 2018, the PPO launched a mediation option for trademark opposition proceedings, in collaboration with the WIPO Center, which administers such proceedings. Under this scheme, the parties benefit from the reimbursement of 50 percent of PPO trademark opposition fees when they reach a settlement within a certain period.

### **Ministry of Culture, Sports and Tourism of the Republic of Korea (MCST)**

The Korea Copyright Commission (KCC) and the Korea Creative Content Agency (KOCCA) – both agencies under MCST – administer mediation proceedings concerning copyright and related rights, and content-related rights in the Republic of Korea. When related international disputes arise, KCC and KOCCA also offer a WIPO mediation option, administered by the WIPO Center. To encourage the use of mediation for these disputes, MCST and the WIPO Center recently concluded an agreement to support ADR-related activities, including a mediation promotion scheme.

### **UNILATERAL REQUEST FOR WIPO MEDIATION**

Parties usually use mediation through their joint adoption of a WIPO contract clause or dispute submission agreement. Where there is no mediation clause or agreement between the parties, the WIPO Mediation Rules facilitate submission of a dispute to mediation. A party that wishes to propose referring a dispute to WIPO Mediation can

submit a Request for Mediation to the WIPO Center, which may then assist both parties in agreeing to use mediation.

#### **ADR OPTIONS IN RESEARCH AND DEVELOPMENT (R&D) MODEL AGREEMENTS**

Parties may consider ADR options in the context of other services offered by IP Offices, including the provision of R&D model agreements. Parties involved in R&D collaborations and technology transfer transactions often use such models as a basis for negotiating and drafting their contracts. To support efficient dispute resolution in this area, the WIPO Center collaborates with concerned stakeholders and entities in the development and dissemination of model agreements for R&D collaborations, which include WIPO mediation and expedited arbitration as options for parties. An example of ADR options in R&D model agreements is:

##### **Spanish Patent and Trademark Office (OEPM)**

OEPM, in collaboration with R&D stakeholders, has developed contract templates – non-disclosure, license, material transfer, and R&D agreements – for R&D collaborations that the Office makes available to interested users. These templates contain model dispute resolution clauses, including referral of disputes to WIPO Mediation followed by WIPO Expedited Arbitration or court litigation.

In recent years, a growing number of IP Offices have begun collaborating with the WIPO Center to develop or enhance their ADR services, especially mediation. The shared goal of these initiatives is to facilitate time- and cost-effectiveness in resolving disputes involving IP rights issued or protected in their jurisdiction. Such ADR services are increasingly recognized as part of innovative new client facilities being offered by IP Offices.

## **Current WIPO collaborations with IP Offices**

The WIPO Center currently collaborates with the following IP Offices:

- National Institute of Industrial Property of **Argentina** (INPI)
- **IP Australia**
- **Brazilian** National Institute of Industrial Property (INPI-BR)
- National Institute of Industrial Property of **Chile** (INAPI)
- National Intellectual Property Administration of the **People's Republic of China** (CNIPA)
- National Directorate of Copyright of **Colombia** (DNDA)
- National Register of Costa Rica **Cuban** Industrial Property Office (OCPI)
- National Copyright Office of the **Dominican Republic** (ONDA)
- National Service of Intellectual Rights of **Ecuador** (SENADI)
- National Center of Registries of **El Salvador** (CNR)
- Directorate General of Intellectual Property of **Indonesia** (DGIP)
- **Israel** Patent Office
- Kenya Copyright Board (KECOBO)
- State Service of Intellectual Property and Innovation under the Government of the **Kyrgyz Republic** (Kyrgyzpatent)
- Ministry of Culture of the Republic of **Lithuania**
- **Mexican** Institute of Industrial Property (IMPI Mexico)
- National Directorate of Intellectual Property of **Paraguay** (DINAPI)
- Intellectual Property Office of the **Philippines** (IPOPHL)
- Patent Office of the Republic of **Poland** (PPO)
- Ministry of Culture, Sports and Tourism of the **Republic of Korea** (MCST)
- **Korean** Intellectual Property Office (KIPO)
- **Romanian** Copyright Office (ORDA)
- Federal Service for Intellectual Property of the **Russian Federation** (ROSPATENT)
- Intellectual Property Office of the **Republic of Serbia**
- Intellectual Property Office of **Singapore** (IPOS)
- **Spanish** Patent and Trademark Office (OEPM)
- **Swiss** Federal Institute of Intellectual Property (IPI)
- Intellectual Property Office of **Trinidad and Tobago**
- Ministry of Economic Development and Trade of **Ukraine** (MEDT)
- Intellectual Property Office (IPO) of the **United Kingdom**
- Copyright Society of **Tanzania** (COSOTA)
- **United States** Patent and Trademark Office (USPTO)

# UPOV: supporting food security with plant variety protection

By **Benjamin Rivoire**, International Union for the Protection of New Varieties of Plants (UPOV) and **Catherine Jewell**, Communications Division, WIPO

The UPOV system enables plant breeders to protect their innovations and obtain a return on their investment in developing varieties that meet the evolving needs of farmers and consumers.



Supporting the development of new varieties of plants is an essential response to achieving food security and agricultural sustainability, especially in a context of climate change and global population growth.

The vision set out in the 2030 Agenda for Sustainable Development foresees a world where “food is sufficient, safe, affordable and nutritious”; where “economic growth, social development, environmental protection and the eradication of poverty and hunger” are “sustained and inclusive;” and where the technologies we develop are “resilient, climate-sensitive, and respect biodiversity.”

Breeding new varieties of plants that fulfill these technological criteria is an important part of translating sustainable development into reality and is particularly challenging in a context where productive agricultural land is limited, urbanization is gathering pace, parallel demands on food and energy production are rising, and human needs are evolving as a result of environmental change. How then do we encourage the development of these new varieties of plants?

This is where UPOV, the International Union for the Protection of New Varieties of Plants (see box) has an important role to play. UPOV provides a system that enables plant breeders to protect their innovations and obtain a return on their investment in developing varieties that meet the needs of farmers and consumers. This, in turn, encourages them to continue investing in their plant breeding programs. UPOV supports the plant breeding landscape by enabling a diverse range of breeders and breeding programs to thrive, while also ensuring that the latest developments in plant breeding are available to farmers and growers around the world. The effective use of plant breeders’ rights under the UPOV system can help translate the goals laid out in the 2030 Agenda for Sustainable Development into reality.

### **PROGRESS IN AGRICULTURAL PRODUCTIVITY**

Over the past 50 years, we have seen tremendous progress in agricultural productivity in many regions of the world. To a large extent, the use of improved plant varieties and application of modern farming practices have been responsible for the increased efficiency of agricultural systems. Future food security hinges on improvements in these areas, especially in the face of expected changes in global demographics. The world’s population is projected to rise from around 7.6 billion today to 9.8 billion by 2050 and will become ever more urban. These factors, coupled with the challenges thrown up by climate change, underline the need to continue to develop ways to boost the productivity and the sustainability of global agriculture.

If we are to succeed in further boosting yields and product quality in agriculture, horticulture and forestry, while minimizing pressure on the natural environment, we need to encourage the development of plant varieties that are high-yielding, pest- and disease-resistant, salt- and drought-tolerant, and generally better adapted to climatic stress. We also need to ensure that the process by which plant breeders can obtain protection for the new varieties they develop is user-friendly, cost- and time-efficient.

## **About UPOV**

The International Union for the Protection of New Varieties of Plants (UPOV) administers an international system of intellectual property (IP) rights that protect plant breeders’ rights and encourage innovation in agriculture through the development of new varieties of plants. UPOV is an intergovernmental organization based in Geneva, Switzerland. To date, it has 75 members covering 94 countries (see [www.upov.int](http://www.upov.int)).

# UPOV PRISMA

“A multilingual online tool that saves plant breeders time and money.”

## **PLANT VARIETY PROTECTION MADE EASIER**

When a country joins UPOV, it benefits from support in establishing its domestic plant variety protection (PVP) system and can take advantage of opportunities to collaborate with international partners. Membership of UPOV helps ensure that plant variety protection extends to the widest range of plant genera and species for maximum economic, social and environmental benefit (see the *UPOV Report on the Impact of Plant Variety Protection*).

To obtain protection for a new variety, breeders need to file individual applications with the PVP Offices of the UPOV members in which they are seeking protection. That rather cumbersome administrative process has been made significantly easier with the launch of UPOV PRISMA, a multilingual online tool that saves plant breeders time and money.

## **ADVANTAGES OF UPOV PRISMA**

UPOV PRISMA is a reliable, user-friendly and smart way for breeders to protect their new varieties in different target markets – and ensure that farmers have access to the best and most suitable varieties. Its multilingual interface (Chinese, English, French, German, Japanese, Korean, Spanish, Turkish and Vietnamese) enhances usability for breeders around the world. Users can access the most up-to-date application forms of participating UPOV members.

A variety of time-saving functionalities make it easier for them to complete and submit their PVP applications in line with the formal requirements of different PVP Offices around the world. For example, if a breeder in Costa Rica wishes to submit a PVP application in Colombia and then decides to submit a second application elsewhere, much of the information contained in the initial application will automatically appear in the second application.



To achieve agricultural sustainability and food security, farmers need plant varieties that produce reliable yields and generate a viable income. The UPOV system helps ensure that plant breeding programs thrive while ensuring the latest developments in plant breeding are available to farmers and growers around the world.

UPOV PRISMA's automatic translation functionalities also make the application process easier. For example, a breeder from the Republic of Moldova who submits an application to protect a variety of soya bean in Chile simply selects the English interface to complete the application. Salient parts of that application will automatically be translated into Spanish as required by the PVP Office in Chile. Users can be sure they are completing their PVP application correctly as they have access to drop down lists pre-filled with technical information. This enables them to easily select relevant information in the required format. In most cases, breeders need only provide translations for free text, which represent a limited part of the application.

UPOV PRISMA is a collaborative platform that enables different parts of the application process to be assigned to different members of a team. For example, one person may be responsible for creating the breeder account, while others are responsible for completing the application form, submitting data and paying the relevant fees online via a secured interface. Of course, in smaller operations the whole process may be handled by one person.

The tool also makes finding a local representative/agent easy. When breeders need a local representative in a country to manage the application procedure or specific parts of it, UPOV PRISMA makes it easier for them to find the help they need. Agents can register their details

on UPOV PRISMA so users can contact them easily if and when they need for their services. UPOV PRISMA also allows breeders to monitor and track the progress of their applications around the world.

The tool offers significant advantages to UPOV Members, especially those who have not yet developed their own online PVP application platform. UPOV PRISMA saves them time and resources because they can use it as their national system.

So far, 28 countries as well as the Community Plant Variety Office of the European Union (CPVO) and the African Intellectual Property Organization (OAPI) have signed up to UPOV PRISMA. Twenty of the 30 participating PVP offices offer the possibility of submitting application data for all genera and species. Others will do so in the near future.

UPOV PRISMA is available free of charge until December 2019.

More information about the platform is available on the UPOV PRISMA website at [www.upov.int/upovprisma](http://www.upov.int/upovprisma). Otherwise, send enquiries to [prisma@upov.int](mailto:prisma@upov.int).

## Relevance of the UPOV system to the United Nations Sustainable Development Goals

- Goal 1 End poverty in all its forms everywhere
- Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 12 Ensure sustainable consumption and production patterns
- Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development: Systemic issues: Multi-stakeholder partnerships





34, chemin des Colombettes  
P.O. Box 18  
CH-1211 Geneva 20  
Switzerland

Tel: +41 22 338 91 11  
Fax: +41 22 733 54 28

For contact details of WIPO's External Offices  
visit: [www.wipo.int/about-wipo/en/offices](http://www.wipo.int/about-wipo/en/offices)

**WIPO Magazine** is published bimonthly and distributed free of charge by the World Intellectual Property Organization (WIPO), Geneva, Switzerland. It is intended to help broaden public understanding of intellectual property and of WIPO's work, and is not an official document of WIPO.

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of WIPO concerning the legal status of any country, territory or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

This publication is not intended to reflect the views of the Member States or the WIPO Secretariat.

The mention of specific companies or products of manufacturers does not imply that they are endorsed or recommended by WIPO in preference to others of a similar nature that are not mentioned.

For comments or questions, contact The Editor at [WipoMagazine@wipo.int](mailto:WipoMagazine@wipo.int).

To order a print version of the WIPO Magazine, contact [publications.mail@wipo.int](mailto:publications.mail@wipo.int).

WIPO Publication No. 121(E)  
ISSN 1020-7074 (print)  
ISSN 1564-7854 (online)