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Editor: **Catherine Jewell**
Layout: **Ewa Przybyłowicz**

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The Patent Cooperation Treaty at 40

By **Matthew Bryan**, PCT Legal and User Relations Division,
and **Catherine Jewell**, Communications Division, WIPO

Today inventors around the world have access to a system, known as the Patent Cooperation Treaty (PCT), which offers a cost-effective way to seek patent protection for their high-value technologies in multiple countries. That system, which has just celebrated its 40th year of operation, has become an essential component of the international patent system.

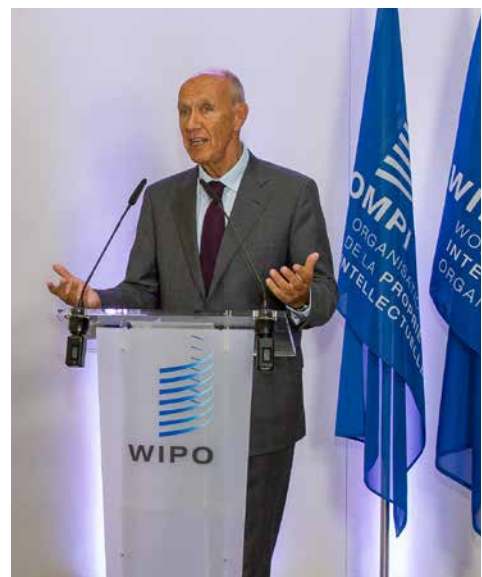
Today, the PCT includes 152 member countries. In the words of WIPO Director General Francis Gurry, the PCT is “truly a global system and a global treaty” that is at “the center of worldwide patenting activity.”

The world’s largest companies (see p. 4), leading universities and research institutions and individual inventors use the PCT as a strategic option to seek patent protection in multiple countries, since a single international patent application filed under the PCT has legal effect in all the countries bound by the Treaty.

ADVANTAGES OF THE PCT

The PCT offers users a number of advantages. In particular, applicants can postpone decisions about the countries in which they want to seek patent protection, and the significant associated costs, by up to 18 months longer than under the traditional patent system. They can also benefit from valuable feedback about the potential patentability of their inventions; at present, 22 patent offices that serve as International Searching Authorities partner with WIPO to provide users with such feedback. This additional time and feedback creates opportunities for applicants to continue the technical development of their invention, test the market for it and, if necessary, find business partners and secure financing.

The PCT also offers national and regional patent offices a number of advantages, in particular, by providing them with the same value-added information on the potential patentability of an invention as provided to applicants, and by freeing those offices from having to evaluate the formal aspects of the application. In this way, the PCT process facilitates decision-making and can increase confidence in the quality of the patents if ultimately granted.



In its 40 years of operation, the PCT has moved “to the center of worldwide patenting activity,” notes WIPO Director General Francis Gurry.

About the Patent Cooperation Treaty (PCT)

The Patent Cooperation Treaty (PCT) offers users of the patent system a cost-effective means of protecting their inventions internationally.

The PCT facilitates the process of seeking potential patent protection in multiple countries and postpones some of the major costs of such internationalization. The granting of patent rights, however, remains under the control of the national or regional patent offices concerned.

By filing a single “international” patent application within 12-months of filing the first patent application with a national or regional patent office, an applicant can set in motion the process of seeking patent protection in up to 152 countries.

The PCT also helps national and regional patent offices with their patent granting decisions; and facilitates public access to a wealth of technical information relating to inventions through the PATENTSCOPE database.



WHAT USERS ARE SAYING ABOUT THE PCT

“WIPO’s Patent Cooperation Treaty is a cornerstone of our IP business,” notes Alexander Kurz, Executive Vice President for Human Resources, Legal Affairs and Intellectual Property Management, Fraunhofer, Europe’s largest applied research organization. “It provides a great deal of legal security and gives us additional time to find the optimal commercial partner and the most appropriate market for our inventions. It is an excellent way to establish IP rights internationally. That’s why we use it,” he says.

Brazil’s pioneering aviation giant, Embraer, uses the PCT for similar reasons. “The PCT is an extremely useful tool that is supporting our drive to expand our global footprint,” explains Wander Menchik, Head of Embraer’s Technology Development Program. “It is particularly useful because it provides a preliminary opinion on the possibility of obtaining a patent grant on a given technology in different countries, and buys the company additional time to take strategic business decisions in relation to a particular technology for which protection is being sought. So it is a cost-effective option that takes the legwork out of the process of obtaining patents in international markets and provides us with feedback that is invaluable in shaping the patenting strategies for our new technologies.”

Smaller outfits, like US-based Nokero, a small social enterprise that produces eco-friendly solar-powered lights for resource-poor householders in developing countries, also find value in the PCT. “Patents are a big part of our business strategy when it comes to patenting. Because we operate in so many different markets, we use WIPO’s Patent Cooperation Treaty,” says Steve Katsaros, Nokero’s founder. “Every startup has limited funds and the PCT is a great mechanism for delaying patent filing costs, allowing time to test the market and overcome any unforeseen technical problems. Without the PCT, protecting an invention in international markets would be a high-risk strategy with huge upfront costs,” he notes.

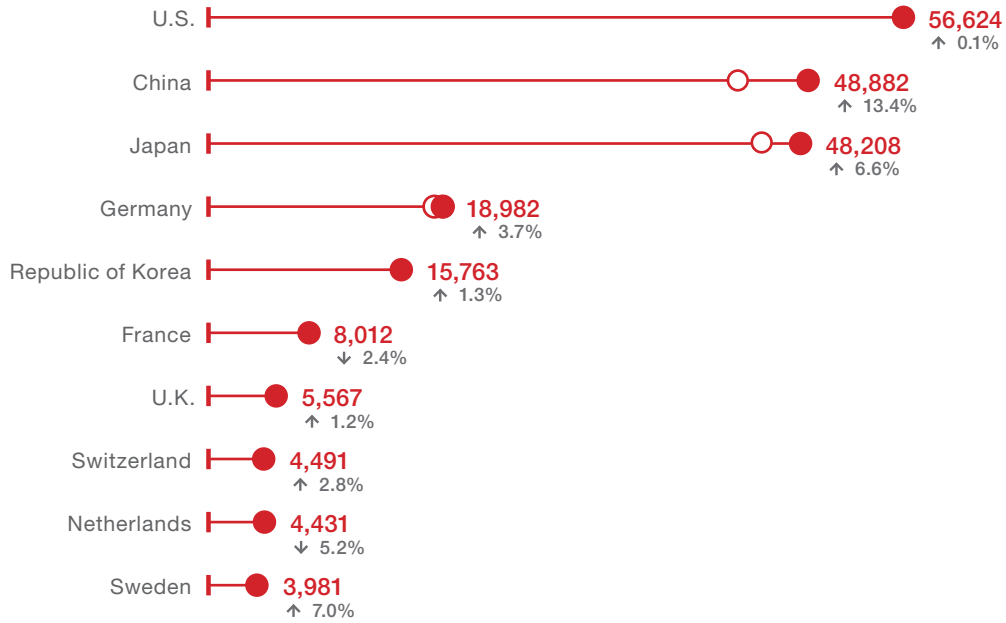
SUSTAINED GROWTH

Since it began operating in 1978, the PCT has enjoyed remarkable growth. In the first six months of its existence, just 459 international patent applications were filed under the system. Twenty-six



PCT top 10 countries

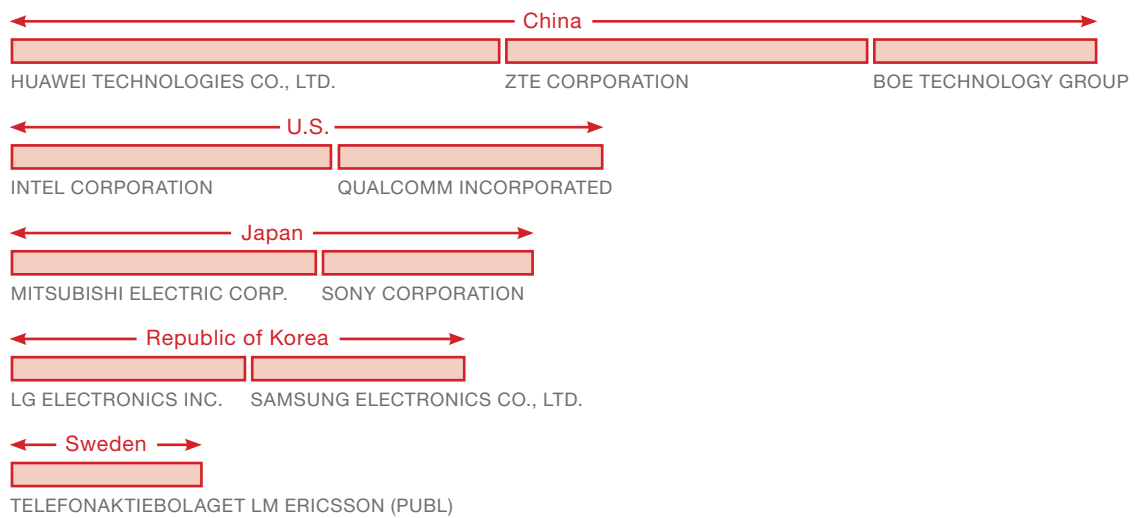
○ 2016 ● 2017



Around 243,000 international applications were filed via the PCT in 2017, up 4.5 percent on 2016, representing the eighth consecutive year of growth. Applicants based in the United States filed the most applications, followed by those in China and Japan.

Source: WIPO Statistics Database, March, 2018

PCT top 10 applicants



Two Chinese technology companies were the top filers of international patent applications in 2017, with Huawei in first place and ZTE in second.

Source: WIPO Statistics Database, March, 2018

years later, one million applications had been filed, and nearly 13 years after that, in February 2017, the three millionth PCT application was published. Every week, on average around 5,000 international patent applications are published in WIPO's PATENTSCOPE database. PATENTSCOPE includes some 70 million patent documents, as well as the 3.4 million international patent applications that have gone through the PCT system to date. PATENTSCOPE offers users invaluable information with respect to who is patenting and where, and in which fields of technology.

Over the last 40 years, with just one exception, in 2009, at the height of the global economic crisis, the PCT has enjoyed steady annual growth in the number of international patent applications filed. In 2017, a record 243,500 international patent applications were filed under the PCT, representing a 4.5 percent increase on figures for 2016.

Since its inception, applicants based in the United States have filed the largest numbers of PCT applications every year, filing nearly 57,000 international patent applications in 2017 alone. But, since the early 2000s, there has been a marked increase in the use of the PCT in Asian countries and, in particular, phenomenal growth in its use by applicants from China. Since 2003, China has posted PCT annual growth rates of more than 10 per cent. And in 2017, China became the second largest user of the system, nudging Japan into third place (see p.4). At current growth rates, it looks set to become the PCT's top user by 2020.

"The rapid rise in Chinese use of the international patent system shows that innovators there are increasingly looking outward, seeking to spread their original ideas into new markets as the Chinese economy continues its rapid transformation," noted WIPO Director General Francis Gurry when releasing 2017 data on WIPO's filing and registration services in March 2018. "This is part of a larger shift in the geography of innovation, with half of all international patent applications now originating in East Asia," he explained.

A BEACON OF MULTILATERAL COOPERATION

The PCT is an excellent example of multilateral work sharing and cooperation in the field of intellectual property (IP). It involves the active collaboration of more than 100 national and regional patent offices which, together with WIPO, move the applications through the PCT procedure in line with the Treaty's requirements.

The PCT system also relies heavily on the engagement of both applicants and their legal representatives. The positive impact of the system on the process of seeking international patent protection is widely recognized within the IP legal community. For example, T. David Reed, former Senior Patent Advisor at Procter and Gamble Company, a major PCT user, once summed up the PCT as "the greatest advance in foreign patent practice and patent portfolio management since the Paris Convention came into force in 1883."



Photo: WIPO / Berrod

Over the past 40 years the PCT has moved from a paper-based system to a mature electronic environment known as ePCT. “It simply would not be possible to process 243,500 international applications each year without the integral support of IT,” says Mr. Gurry.

AN EFFECTIVE RESPONSE TO A REAL NEED

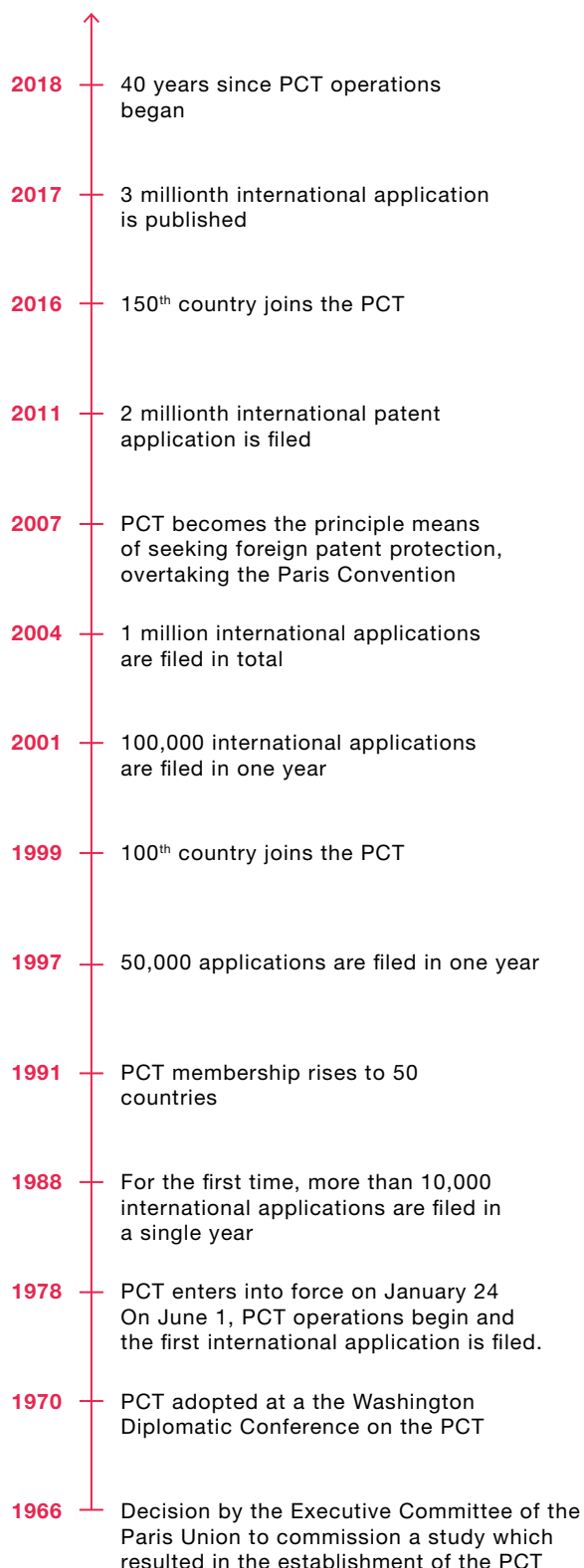
At its core, the PCT addresses two very real needs and this is the key to its remarkable success. On the one hand, it offers applicants a practical tool to assist them in seeking patent protection in international markets. And on the other hand, for the patent offices of PCT member countries, it serves as an effective work-sharing platform and creates opportunities to generate efficiency gains in processing international patent applications.

The partnership of national and regional patent offices of PCT member countries has also been central to the PCT’s success. Their engagement, insights and experiences, along with feedback from users, has enabled the system to evolve and respond to practical real-world needs. That, coupled with a dedicated international team of support staff, both at WIPO’s headquarters and within the patent offices of member countries, has made it possible for the PCT to become recognized as a reliable and high-quality service provider.

A TOOL FOR ECONOMIC DEVELOPMENT

From the outset, as noted in the Treaty’s Preamble, the desire “to foster and accelerate the economic development of developing countries,” has been integral to the PCT’s vision and evolution. Today, developing and least developed countries make up the bulk of the PCT’s membership. Each of these countries benefits from technical support from WIPO both in terms of enabling them to navigate and use the PCT and more generally to support the development of national IP systems. Also, certain patent applicants from these countries can benefit from a 90 percent reduction for

The Patent Cooperation Treaty: Milestones



one of the main PCT-related filing fees. These countries can benefit from the technical information that flows also the PCT system, especially, with respect to international applications that do not ultimately seek patent rights in those jurisdictions, and thereby become part of the public domain in those countries.

THE WAY AHEAD

The PCT has come a long way in the past four decades and has recorded many notable achievements. But there is still much to achieve to ensure it continues to support “innovation, investment and development,” as foreseen by its founders. That is why, together with its partners, the PCT is continuing to push ahead to improve its services, for the benefit of all stakeholders.

Some fifteen months ago, at the time of the publication of the three millionth international patent application under the PCT, WIPO Director General Francis Gurry published a document entitled *The PCT System – an Overview of Possible Future Directions and Priorities*. The overview provides policymakers with “food for thought” on the broad directions and priorities for future work to further improve the PCT for the benefit of users and IP offices alike.

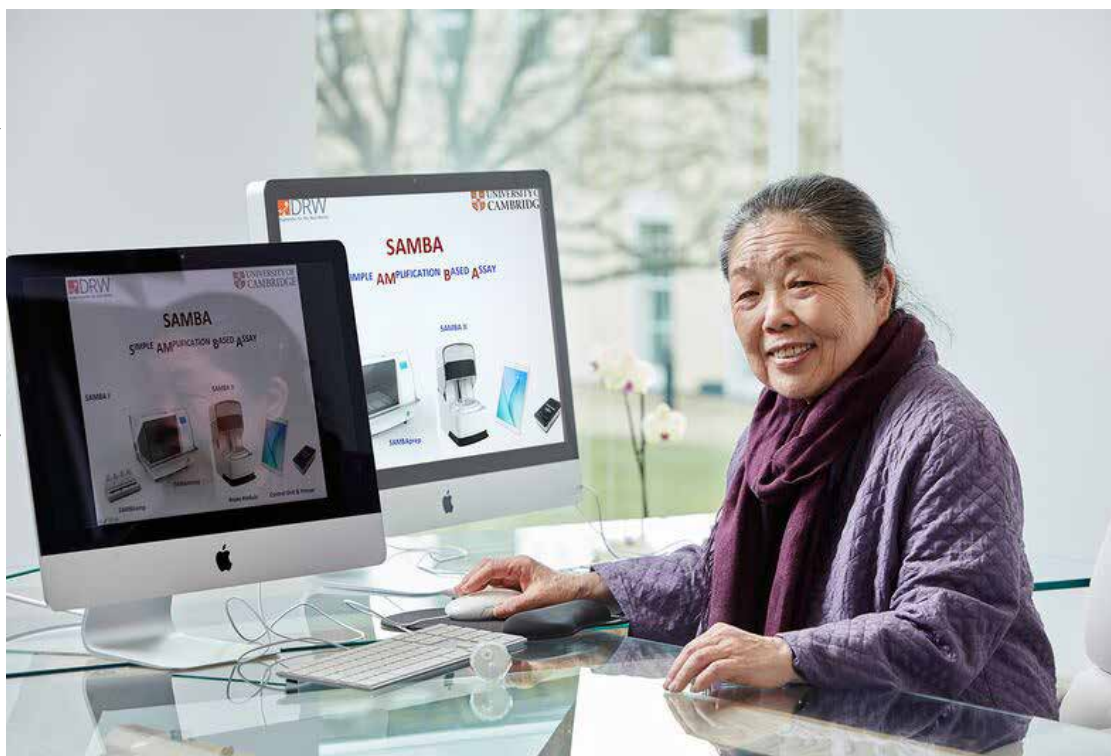
“The key to future improvements [in the PCT] lies in putting renewed emphasis on the ‘Cooperation’ aim which underpins the Treaty,” Mr. Gurry wrote. “In the view of the International Bureau, it is now mainly up to the Contracting States and the national and regional Offices which perform roles under the Treaty to put further life into that ‘Cooperation’ aim with a view towards making the PCT system fully effective as a tool to support innovation, investment and development that those same Contracting States designed it to be,” he added.

In light of the PCT’s remarkable success over the past 40 years, and with the ongoing constructive collaboration of all stakeholders, we can look to the future with some optimism, confident in the fact that the PCT will remain “fit for purpose” for many decades to come.

Diagnostics for the Real World: point-of-care diagnosis made easy

By Catherine Jewell,
Communications Division, WIPO

Photo: Courtesy of Directorate, External Communications, European Patent Office



Dr Helen Lee and the SAMBA II, a simple and robust way to detect infectious diseases at the point of care in resource-poor settings. The SAMBA II offers healthcare workers in resource-poor environments the opportunity to effectively test, diagnose and treat patients within hours.

In an ever more interconnected world, the threat of infectious diseases is perhaps greater today than at any other point in human history. Controlling and preventing these diseases is a huge challenge – particularly in resource-poor regions of the world – and one that requires early detection. A ground-breaking new point-of-care diagnostic tool, developed by Dr. Helen Lee and her group at Diagnostics for the Real World, offers healthcare workers in resource-poor environments an opportunity to effectively test, diagnose and treat patients within hours. Dr. Lee, who also established the Diagnostics Development Unit at University of Cambridge in the United Kingdom, tells us more about the remarkable device and shares her views on innovation and intellectual property.

How did you become an inventor?

I really became an inventor through necessity. My goal has always been to develop diagnostics that are simple, accurate, rapid, heat-stable and inexpensive for resource-poor settings. Invention starts with a need, that's what drives it forward. To be successful, one needs to be able to deal with failures, day in and day out: to bounce back and never give up.

I am also quite curious and was lucky enough to have parents who never put a ceiling on what I could do. Their response was always, "why not?" So I have had no ceiling to stop me and I always try to find a way.

What prompted you to move from the industry to academia?

My husband and I have an agreement. One time I move for his career and the next time he moves for mine. When I went to Abbott Laboratories, he left a very good job to follow me and then when he was offered a professorship at Cambridge, I followed him. I learned a lot and gained a great deal of valuable experience at Abbott, but the corporate world was not for me in the long run.

Tell us about Diagnostics for the Real World?

We set up the company as a spin-off from the Diagnostics Development Unit at the University of Cambridge in 2003 where a lot of the fundamental research was done. We are still scaling up our operations and now employ 40 people. We are for profit, but profits are capped at 15 percent for low- and middle-low income countries, and our motto is "balancing doing well with doing good". I was determined to set up a company and scale up production and distribution. As I often say to my group, if all we do is publish a few papers in high-impact journals and develop a prototype, we will have failed. We are delighted to have secured a rather substantial order recently from The Global Fund. It's our biggest yet. So it's been all hands on deck.

What is it that you make?

We have developed a simple and robust way to detect infectious diseases at the point of care in resource-poor settings. It's built around nucleic acid testing which not only enables earlier detection of infectious organisms such as HIV but can also monitor the effectiveness of its treatment. Conventional nucleic acid testing requires highly trained personnel and sophisticated laboratory facilities in order to extract, amplify and detect the targeted nucleic acids. It is a complex process that can be very difficult to carry out in a resource-poor setting. We set about simplifying that process and making it more user-friendly and robust. And we succeeded. Our device, the SAMBA II – our engineers like dancing! – is the size of a small domestic coffee machine and converts the detection of nucleic acid into a simple visual signal like a pregnancy test: two lines, it's positive; one line, negative; and no line, it's incorrect. This simplification of an extremely complex process took years of research and won the 2016 Inventor of the Year Award by the European Patent Office.

SAMBA is operated by a tablet which allows data to be transmitted easily to the relevant health authorities. It also uses long-lasting thermostable paper for printout, if needed. It took us almost 10 years to develop our latest, more user-friendly SAMBA II machine and chemistry. The SAMBA test comes with unit dose cartridges (containing some 180 required chemicals and reagents) which are simply inserted into the machine. The cartridges are uniquely shaped and, like LEGO blocks, they can only be inserted one way, the correct way. SAMBA works on the principle of sample-in, results-out, and aims to be foolproof.

With the realities of resource-poor settings as our starting point, we have really tried to ensure that all elements of the instrument are robust, stable and heat tolerant. SAMBA II can operate in temperatures up to 38°C. We also invented a process to stabilize labile enzymes to ensure our reagents withstand high temperatures – up to 37°C – for around nine months. To achieve this, we did something unconventional: we eliminated certain standard chemicals. This included getting rid of one that produces cyanide, which has turned out to be a tremendous advantage from the point of view of the environment and waste disposal.

The kit includes everything needed to collect a sample, even gloves. Sample collection and extraction is like the wheels of a car, without them you go nowhere. I am convinced it is the key to early detection and successful treatment of infectious diseases. We are delighted that SAMBA is now being used in regional and district hospitals as well as lower level clinics in the Central African Republic, Malawi, Uganda and Zimbabwe. We are also carrying out in-country trials in Cameroon and Nigeria, to be shortly expanded to Tanzania.

What else makes the SAMBA II stand out?

From the outset we had the realities of resource-poor settings in mind and made our mistakes early in the development process, thanks to funding from organizations such as the Wellcome Trust, the National Institutes of Health (NIH), the Children's Investment Fund Foundation (CIFF) and, more recently, UNITAID. Many of the diagnostics available today are made for Western markets and cannot be adapted easily to many clinics in resource-poor settings where power cuts are a daily occurrence. The SAMBA machine provides an uninterruptible power supply that kicks in when needed, so the test can be completed if there is a power cut.

Surprisingly, dust was our biggest unforeseen problem. When you do nucleic acid amplification chemistry, you need an airflow to cool the device. That means dust gets in everywhere. We overcame the problem by redesigning the filter holder and making it easy to remove. We now use a washable air filter.

We believe the SAMBA II HIV test is a real game-changer because by being adapted to whole blood samples, it eliminates the need for both phlebotomists to collect blood samples and a centrifuge to prepare plasma for testing. Both of these are in short

Photos: Courtesy of Directorate, External Communications, European Patent Office



The SAMBA II is about the size of a domestic coffee machine and converts the detection of nucleic acid into a simple visual signal like a pregnancy test. It comes with unit dose cartridges (containing some 180 required chemicals and reagents) which are simply inserted into the machine. The machine works on the principle of sample-in, results-out, and aims to be foolproof.

supply in resource-poor settings. All SAMBA II needs is a droplet of blood from a finger prick to be placed in a vial and inserted into the machine which will then detect the presence (or absence) of infection.

Can the SAMBA II be used elsewhere?

Yes, there are many potential uses – in old peoples’ homes to detect and prevent the spread of flu, at airports to test quarantined fruits and on farms for bovine TB testing. It’s a new tool that opens up new uses and hopefully new markets.

What role does intellectual property play in your company?

I firmly believe in the importance of patent protection, and for a small company we have invested a great deal in it. We hold 17 patent families all related to diagnostics and have registered SAMBA as a trademark. We also protect our technologies by filing international patent applications under the Patent Cooperation Treaty. This system allows us to defer the cost of filing patent applications in national territories and can provide valuable feedback about the patentability of our inventions before we make the decision to proceed in those territories.

IP rights help us defend our interests against its unauthorized use and give us the freedom to operate. That



is everything. A large company recently tried to revoke one of SAMBA's key patents related to an inventive, yet simple sample extraction method for nucleic acid testing without generating cyanide which is a common by-product of conventional extraction methods. Thankfully this attempt was unsuccessful in that our patent was upheld with only minor amendment, although an appeal of that decision by the large company is pending. I figure we must be on to something good if they are tracking us and trying to invalidate our patent!

Now that we have regulatory approval, and our first big order, I am determined to make the company profitable. Only then can we be sustainable. We are committed to scaling up our operations, maintaining the quality of our product and generating enough income (thanks to our intellectual property (IP) rights) to continue improving and developing new applications for our technology. It's all really exciting and exhausting!

What sort of impact is the SAMBA having?

I recently visited a small clinic in Kenya, and was quite moved to learn that thanks to their use of our SAMBA II for early infant diagnosis, for the first time, the physicians were able to test a baby on the spot and treat it without

waiting weeks or months for the results. Centralized testing has an uneven impact because of difficulties in transport, communications and in recalling patients. Testing and treating patients immediately can significantly improve health outcomes. And with the SAMBA test, physicians can also show their patients via the visual signal that their treatment is working, which motivates them to stay with it.

Where would you like to be in 10 years?

We are looking to see where SAMBA can make the greatest impact, both as a business, and in terms of improving health outcomes. Our aim is to diagnose and treat millions of people over the next decade. I really would like to see our simple and effective devices being used everywhere, but we need to be smart and strategic as we go forward. It's a lot of fun and I am dying to see where and how far we can go.

What can governments do to support small companies in their use of IP?

I would like to see some kind of fund set up to help small companies defend their IP rights during the "valley of death", where the technology has been developed but

The SAMBA II is a potential game-changer as it eliminates the need for phlebotomists to collect blood samples and a centrifuge to prepare the plasma for testing. Both of these are in short supply in resource-poor settings.



scale-up and commercialization are needed. Any company benefitting from the fund would, in return, agree to pay a percentage of revenues generated from future sales or licensing. That way the fund becomes self-perpetuating. Had such a fund existed, we would have been able to sue a large diagnostics player for infringing one of our key patents. Unless all companies can protect their IP rights, they only benefit from one side of the IP coin. We still have freedom to operate – it's true – but unchallenged infringement actions undercut potential economic returns for small companies. This is fundamentally wrong and should be countered.

How do you explain the gender gap in innovation?

Innovation and the patents that protect it are gender indifferent. Women are of course as capable as men in deciding which experiments to do, and are often natural inventors. The gender gap in innovation is an upstream problem. There are simply not enough women in senior or leadership positions. Although there are lots of fantastic women out there, it can be difficult for them to maintain their career through their childbearing years. Without a flexible working environment, women will not be able to bear children and have a career without struggle – it just won't happen. That is why it is so important for employers to offer more flexible working arrangements and for our social services to provide excellent but affordable child-care. This is not about women's lib; it is about capturing women's talents and ensuring that society benefits from them.

As a member of the jury for the 2018 Inventors Award by the European Patent Office, I am very happy to see that this year's award had record-breaking number of winners who are women. This truly demonstrates that women inventors have arrived in spades by their achievements.

Why is innovation important?

Innovation is critically important because it improves our lives on so many different levels. If exploited properly, it can remove inequality between sexes, nations and peoples. And it's fun.

What advice do you have for girls and young women?

My mother always told me, "If you really want to do something, and if what you want to do is really worthwhile, the world will stand back and let you go through."

Who is your greatest inspiration?

My mother, of course, and a certain Dr. Rosemary Biggs, who told me something very simple. She said, "Helen, be useful." I have never forgotten that. And I like being useful.

Pioneering fog-harvesting technology helps relieve water shortages in arid regions

By Catherine Jewell,
Communications Division, WIPO

CloudFisher® is a pioneering new water technology that offers communities facing severe water shortages in arid and foggy coastal or mountainous regions an affordable and sustainable source of clean water.





Photo: Courtesy of Aqualonis, GmbH

When we think about sources of water, fog is not the first thing that springs to mind. But a pioneering new water technology called the CloudFisher® offers communities facing severe water shortages in arid and foggy coastal or mountainous regions an affordable and sustainable source of clean water.

Developed by the German Water Foundation (WasserStiftung®), the technology is commercialized and implemented through Aqualonis, a Munich-based for-profit company headed by industrial designer Peter Trautwein, who is also responsible for the Water Foundation's fog water extraction sector. The CloudFisher's pioneering design, which takes fog-harvesting technology to a new level, is the brainchild of Mr. Trautwein with input from researchers at the Technical University in Munich.

In 2013, recognizing the shortcomings of existing fog-harvesting technologies, in particular their inability to withstand high winds, the German Water Foundation began working with Mr. Trautwein and a team of researchers to come up with a more efficient and sustainable fog-harvesting system.

"When I first saw fog collectors in Eritrea, I was disappointed with the bad construction," says Mr. Trautwein. "All over the world, this idea fails because of its construction, not because of the principle. On the day of my visit, I was determined to design a maintenance-free and effective system," he explains, noting that when such equipment suffers damage, the people that use it typically lack the means or the know-how and technical understanding to maintain it.

OPTIMIZING FOG COLLECTION IN MOROCCO

Over a two-year period between 2013 and 2016, the team piloted fog-harvesting technology on the slopes of Mount Boutmezguida in Morocco to optimize the design and assembly of fog collectors and demonstrate their ability to serve as a reliable source of clean water. During the pilot phase 10 different types of mesh fabric were tested.

The team found that woven mesh and fabrics made of stainless steel produce a lower water yield than three-dimensional spacer fabrics, which Aqualonis has been using ever since. The larger surface area of three-dimensional spacer fabrics can capture many more tiny water droplets than other materials, and the distance between the monofilaments is very important – it must not be too small or too big. "The specially produced monofilaments used in the CloudFisher were developed for use in food safety and for extreme UV radiation," Mr. Trautwein explains. These materials are proving very resilient, with little visible sign of deterioration even after three years of continuous use.

Mount Boutmezguida proved an ideal location for the pilot. It is one of the driest regions of Morocco and, located in the Anti-Atlas Mountains not far from the coastal town of Sidi Ifni, for most of the year it is shrouded in fog and clouds that roll in from the Atlantic. For many years the villages in the area have lived with the threat of drought, suffering severe water shortages and stress resulting from low annual rainfall and depleting ground water sources. But with CloudFisher technology they are now able to tap into the plentiful water supply that literally hangs in the fog and the clouds that envelope Mount Boutmezguida.



Photos: Courtesy of Aqualonis GmbH

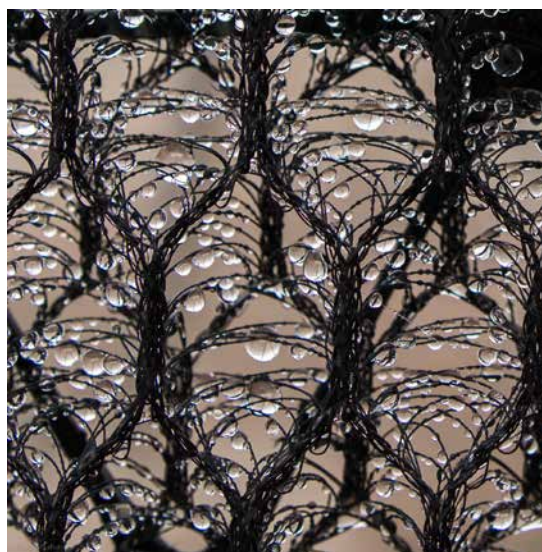
ABOUT CLOUDFISHER TECHNOLOGY

The CloudFisher consists of a fine-mesh net suspended within a steel frame. The net is held in place by a series of rubber expanders that also attach it to the collector at its base. The expanders “create tension on all four sides of the whole geo-grid or mesh,” Mr. Trautwein notes. “A normal approach is to try to stabilize the seam at the edges of the nets because that is where the wind impact is concentrated, but it makes better sense to distribute the wind energy across the whole surface,” he explains.

The nets are positioned to allow the wind to blow the fog through the nets for maximum water collection. The water vapor in the air is trapped in the fine mesh of the net, condenses and drips down the mesh into a collector at the base.

The technology is quick and easy to set up – requiring just two simple tools – and is low-maintenance. “The only parts of the CloudFisher that are likely to tear in a storm are the rubber expanders, and these are cheap and easy to replace,” explains Mr. Trautwein.

Easy assembly and maintenance are particularly important in resource-poor locations, where funds and spare parts are limited at best. “It is important to use parts that the people actually doing the assembly in whatever country can easily understand. That way you don’t have to spend too much time explaining the system to them,



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The technology is quick and easy to set up and is low-maintenance. Easy assembly and maintenance are particularly important in resource-poor locations, where funds and spare parts are limited at best.



Photos: Courtesy of Aqualonis, GmbH



and maintenance is trouble free. You have to make sure that people get the message immediately. That was crucial for me right from the start," he says.

The company produces two types of CloudFisher, the CloudFisher Pro, consisting of four nets measuring 13.5 square meters with a total surface area of 55 square meters, and the CloudFisher Mini, which consists of three nets measuring 5.5 square meters covering a surface area of 16.5 square meters.

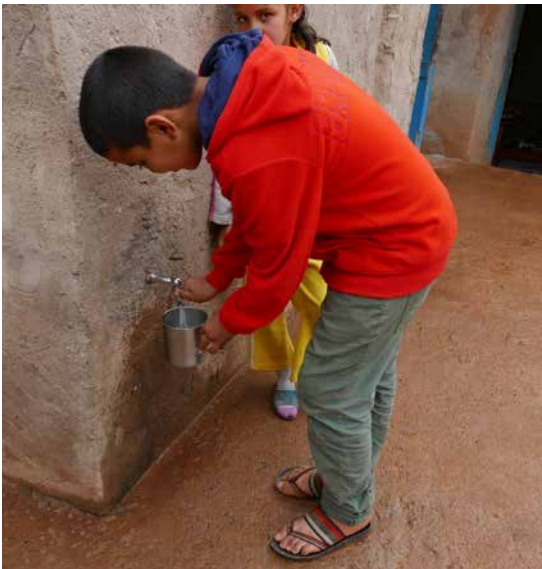
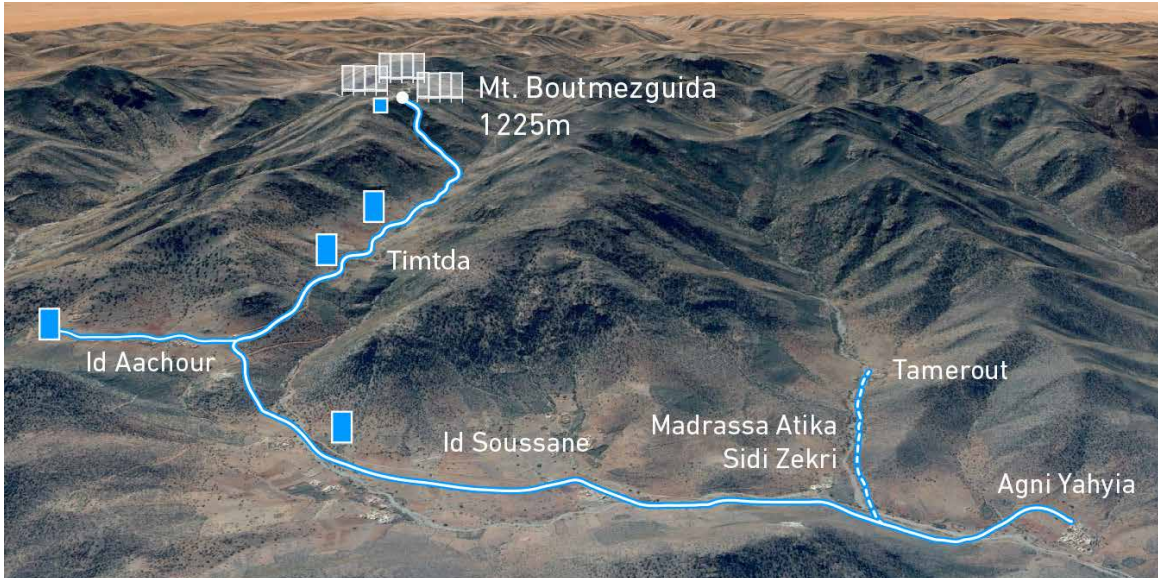
A MORE EFFICIENT FOG-HARVESTING SOLUTION

The CloudFisher stands out from other fog-harvesting system in a number of ways. It is the only fog-collecting system, to date, that can withstand winds of up to 120 kilometers per hour; its fine food-safe 3D mesh makes it possible to trap more water vapor from the air than other models; and its robust plastic grid helps prevent tearing and also stops the mesh from bulging and draining outside the collector at its base. The rubber expanders used to secure the net and the collector to the steel frame serve as a buffer against strong winds and also ensure that the collector follows the movement of the net in the wind. Samples of the water harvested from the CloudFisher in Eritrea, Morocco and the United Republic of Tanzania comply with World Health Organization standards but can vary from region to region.

So how much water can be harvested from fog? According to Aqualonis, CloudFisher technology makes it possible to harvest between 10 and 22 liters of water per square meter of net, depending on the region and time of year, though they also note that the CloudFisher once produced nearly 66 liters of water on the slopes of Mount Boutmezguida.



Photos: Courtesy of Aqualonis, GmbH



Thanks to CloudFisher® technology, communities on the slopes of Mount Boutmezguida, one of the driest regions in Morocco, now have access to a plentiful water supply that literally hangs in the fog and clouds that roll in from the Atlantic.

THE WORLD'S LARGEST FOG-HARVESTING PARK EMERGES

In January 2017 the pilot moved into full implementation with 15 CloudFisher collectors installed in collaboration with the Dar Si Hmad Foundation, a Moroccan woman's charity, and local building companies. An additional 15 collectors will be installed in 2018, making it the world's largest fog-harvesting park with 1,682 square meters of fog-harvesting mesh in place. "That means that on a foggy day, the park will be able to produce up to 37,000 liters of water a day for the surrounding villages," notes Mr. Trautwein.

Aqualonis has been commissioned by the Water Foundation to roll out the project. So far, every house in 14 surrounding villages and a school have been connected to the CloudFisher collectors via a delivery system where water is collected into five storage cisterns and piped down the mountain into villagers' homes. The water cisterns will help to ensure that water is readily available throughout the year, including during most of the dry season.

IMPACT

The technology is already having a marked impact on the households of surrounding villages. Women and girls, traditionally responsible for fetching and carrying

water, no longer have to spend hours trekking to remote locations to collect water for their families' daily needs. With fresh, clean drinking water now piped into their homes, they can devote more time to learning to read and write and other activities. The ready supply of water also means villagers can grow more fruit and vegetables, with health improvements associated with a better diet and opportunities to trade and generate income.

When the project is completed, around 1,150 villagers will have access to up to 18 liters of water per day, compared to just 8 liters in years past. In the interests of sustainability, however, villagers are required to pay a modest sum for the water to cover operating and maintenance costs. "The communities have participated and welcomed what originally seemed to them an unconventional idea," notes the Dar Si Hmad Foundation, which has been working with the team and liaising with the communities in rolling out the project.

NEW LOCATION, NEW LEARNING

Now that the Mount Boutmezguida fog-harvesting park is well underway, Aqualonis is beginning a new project working with a German non-profit organization, p(ed)d world, in Qameyu in the United Republic of Tanzania to upgrade the fog-harvesting infrastructure at the Qameyu secondary school. The school has been fog-harvesting for many years, but the collectors they have been using have been prone to tearing and other wind damage. The installation of the more robust, efficient and high-yielding CloudFisher technology will provide the school's 300 students with a more abundant supply of clean water that will also enable them to cultivate the school garden. "The students will benefit from the fact that CloudFisher technology produces much higher water yields than the old nets and requires minimal maintenance," notes Mr. Trautwein. Well construction is not possible in this area because Qameyu is located on a highland plateau.

"We improved and tested our CloudFisher technology over a three-year period in Morocco, where we were working at 1,225 meters above sea level, and our work in Tanzania is a great opportunity to test it under very different conditions. In Qameyu we will be working very close to the equator and at an altitude of 2,500 meters," he says. "This is a win-win for everyone involved. On the one hand, we see innovation and technology transfer working in practice, and on the other, the local people have more clean drinking water at their disposal."

THE ROLE OF INTELLECTUAL PROPERTY

CloudFisher® is a registered trademark held by the German Water Foundation, and the technology itself is protected using both utility models and patents. "We protected the system to prevent others from copying it and to ensure we have freedom to operate with no fear of infringing anyone else's rights because the technology can also be used for commercial purposes, for example by breweries," Mr. Trautwein explains. "We used the Patent Cooperation Treaty to protect our technology (WO/2016/062877) because it offers a very cost-effective and straightforward way of applying for patent protection in many different countries. I transferred the rights to the German Water Foundation, which is a strictly non-profit entity. Aqualonis markets and sells CloudFisher products under license from the Foundation." This arrangement means that profits from the implementation of projects can be used to support the Water Foundation's social projects. "This is important, because in the future we will need a source of income to supply people with water," he says.

CloudFisher technology makes it possible to deliver clean drinking water to communities facing severe water shortages in arid coastal and highland regions where fog is a regular occurrence. Low rainfall and depleting ground water resources put communities under huge pressure, making them prone to a range of challenges ranging from land degradation and rural migration to poor literacy, and low levels of nutrition and health. CloudFisher technology offers these communities a user-friendly, low-maintenance and sustainable alternative. And despite the significant progress made in improving the technology, Peter Trautwein remains committed to finding ways to further perfect it and to supporting its installation in as many places as possible, "to give more people, especially women and girls, more time for education."

This is clearly a business where every drop counts and which has the potential to improve the well-being of hundreds of thousands of people around the world living under the threat of drought in resource-poor environments.

IP Australia puts digital intelligence to work

By **Patricia Kelly**, Director General, IP Australia

Not so long ago the average person's understanding of artificial intelligence (AI) was framed by movies like *The Terminator* and *A.I. Artificial Intelligence*. Skynet in *The Terminator* movies was the fictional AI platform that eventually gained self-awareness after it infiltrated millions of computer servers around the world. In the movie *A.I. Artificial Intelligence*, advanced humanoid robots capable of thought and emotion were developed as *replacement* humans. These movies used creative license to dramatize and give expression to people's real fears: that computers would eventually become more intelligent than humans and would negatively change our world.

AI is changing our world and like every leap in technology it has great benefits as well as risks that need to be managed. At IP Australia we have been on a journey of AI discovery, working with leaders in the field from Australia and elsewhere to understand the applications of AI for intellectual property (IP) and the way we administer it. AI is, of course, not the only technology reshaping our world; other technologies including big data, the Internet of Things and advanced robotics will also have a strong impact and together these technologies will lead to fundamental change affecting markets, the workforce, business operations and society in general. The combination of big data and AI is particularly powerful – and useful to the IP sector.

AUGMENTING OUR INTELLIGENCE

As so eloquently put by Virginia Rometty, IBM's first female CEO, "Some people call this artificial intelligence, but the reality is this technology will enhance us. So instead of artificial intelligence, I think we'll augment our intelligence." Over the past five years, IP Australia has been working on a proof of concept to achieve augmented intelligence. Our aim has been to develop new, more efficient ways to deliver our services. Our real-life AI platform is far less dramatic than its fictional equivalent Skynet, but its potential impact is just as far reaching, all be it for good. What we learned from these augmented intelligence endeavors is shaping many of our current projects.

Today, over 99 per cent of the 850,000 annual customer transactions handled by IP Australia, worth over AUD 200 million in revenue, are digital. To achieve this we have radically transformed digital customer engagement, positioning IP Australia as the first fully digital Australian Government service delivery agency for Australian citizens.

This journey began in 2013 with the implementation of a digital transaction platform. At that time, the bulk of IP Australia's systems were paper-based with just 12 percent of transactions undertaken digitally. It was from this foundation that our digital transformation really began.

“AI is changing our world and like every leap in technology it has great benefits as well as risks that need to be managed.”

Patricia Kelly, Director General, IP Australia

OUR VIRTUAL ASSISTANT LEARNS LIKE A HUMAN

In 2016 we launched Alex, our virtual assistant (VA) on our website. Alex works 24/7 and manages basic customer enquiries. It uses a combination of advanced natural language processing and machine learning to better support customers. Since launch, Alex has had over 85,000 conversations with customers and has maintained an 84 per cent satisfaction rate. Thanks to a built-in live chat function via our call center we continue to augment Alex’s “intelligence”. Recent enhancements are helping Alex “learn” more quickly via advanced machine learning. With every conversation, Alex’s capacity to respond to future conversations with more accuracy is enhanced. Alex is enabling IP Australia to respond to customer enquiries in a faster and more effective way.

IP Australia’s approach to and implementation of Alex has been recognized with a number of awards, including an Australian National Archives Award for Digital Excellence and a Silver Stevie Award for Innovation in Technology Development in 2017 at the Annual Intelligent Assistant Awards in San Francisco, USA.

MIMICKING HUMAN THOUGHT WITH IMAGE-RECOGNITION TECHNOLOGY

Having “dipped our toe” into the artificial intelligence space, the possibilities mushroomed.

In 2017, we launched our new Australian Trade Mark Search tool. The decision not to upgrade the old trademark search tool but to scrap it, gave us the opportunity to adopt industry-leading

Photo: Courtesy of IP Australia



Patricia Kelly, Director General of IP Australia (left) has been leading her Organization’s drive to develop new, more efficient ways to deliver its services using artificial intelligence.



practices and to become one of the first IP offices in the world to integrate trademark image-recognition and search technology.

Developed by the Australian startup TrademarkVision, the technology mimics the problem-solving networks of the human brain using multiple algorithms to detect objects within an image. This makes searching for similar logos simpler and faster, producing more accurate results from over 400,000 trademark applications in seconds. Our tool attracts over one million page views every month from 40,000 customers. And this technology is now in use in other IP offices. We have also worked with TrademarkVision to develop a new *Trade Mark Assist* tool to guide trademark filers (particularly self-filers) through the application process.

A key objective for IP Australia is to create easier ways for customers to interact with or register intellectual property in Australia. With the implementation of these new tools, we are delivering on this. The IP Australia team's achievements in this area were recognized last year at the Prime Minister's Awards for Excellence in Public Sector Management.

A WORLD-FIRST DIGITAL WALLET FOR IP

Portfolio View is the latest enhancement to our e-Services platform which serves as IP Australia's digital e-commerce transactional platform. This new tool gives customers a quick and easy view of all their IP rights in one place online. Its success has since prompted us to develop our IP Folio mobile app, a digital wallet for IP.

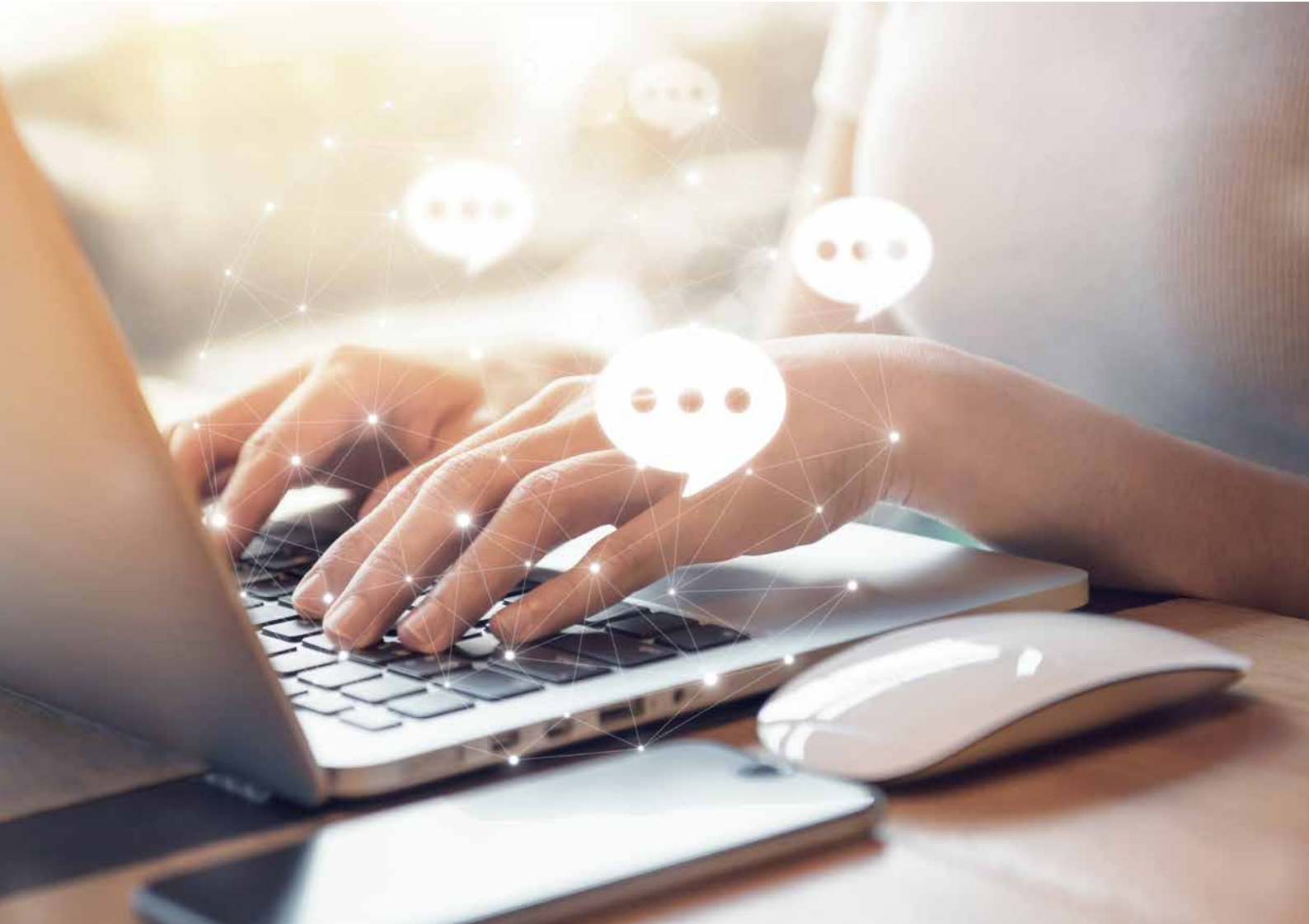
The IP Folio app is free of charge, and is the first in a series of next-generation digital services we intend to deliver to customers. It is user-centered, data-rich, and offers access to real-time information.

We built the app using agile methodology whereby we released alpha and beta versions to our customers for feedback, while continuing to develop and perfect the technology.

IP Folio for trademarks was launched in December 2017 on iPhone. It offers customers an accessible, convenient and responsive interface. Additional capabilities have since been added, including options to "watch" or add "favorite" trademarks (even if they aren't owned by the user) and to receive push notifications for selected trademarks as their status changes.

The team continues to work on the next version of IP Folio to be released in the course of the year. This new version will be Android-compatible and will also cover patents.





In recent years, IP Australia has been on a journey of AI discovery, working with leaders in the field from Australia and elsewhere to understand the applications of AI for intellectual property and the way it is administered.

DIGITAL DISRUPTION

With hindsight, IP Australia's enhanced use of technology to deliver its IP services has indeed been disruptive. Our staff has had to adapt to new systems quickly, internal processes have changed to accommodate the new technology, and our organizational culture is shifting to one of rapid innovation where machines and humans work together.

Despite the clear benefits of our approach, I am still aware of the fears that the use of artificial intelligence brings out in people. As the Italian Renaissance thinker, Niccolò Machiavelli said, "There is nothing more difficult to take

in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things."

While movies like *The Terminator* have given way to a modern acceptance of the benefits artificial intelligence can bring, when building our respective organizations it is important that we remain conscious of, and squarely focused on, the need to use and apply digital intelligence in a way that augments the human experience.

At IP Australia our digital journey is gaining momentum. I am excited to see where it takes us.

Curaçao celebrates 125 years of trademark history

By Gedeona Maduro, Martina Everts-Anthony and Ramses
Petronia, Bureau for Intellectual Property, Curaçao





The small Caribbean island of Curaçao enjoys a long tradition of trademark protection. This year, it is celebrating 125 years of trademark history.

The small island of Curaçao lies some 65 kilometers north of the coast of Venezuela, has around 160,000 inhabitants, and boasts a sunny, warm climate all year round and some of the most beautiful beaches on the planet.

You may also have heard of its world-famous liquor, Blue Curaçao, made from the dried peel of the Laraha citrus fruit, which grows on the island.

But beyond its welcoming climate and heady liquor, Curaçao also enjoys a long tradition of trademark protection. This year, it is celebrating 125 years of trademark history, and the fact that it was one of the first in the region to establish a fully operational trademark registration system.

CURAÇAO'S FIRST TRADEMARK

Curaçao's first trademark application is dated January 20, 1893. It was submitted by Mr. Abraham Mendez Chumaceiro on behalf of Mignot & De Block, a Dutch producer of tobacco products, based in Eindhoven, Netherlands which sought to register the "*Maria Cristina*" mark for cigars. As Curaçao fell under the jurisdiction of the Kingdom of the Netherlands at that time, the application was processed in line with Dutch trademark law which first came into effect in the Netherlands on January 1, 1881, and was amended on September 30, 1893. This first trademark application was based on the first legal instrument on trademarks of Curaçao, an ordinance dated February 12, 1881.

Just months after the submission of its first trademark application, a new Royal Decree dated November 9, 1893, established the entry into force of a new trademark law for Curaçao.

While the first trademark registration has lapsed, Curaçao's trademark register still features the trademark "*Vinolia*". It was first registered by the Vinolia Company Limited of London, on December 30, 1901 and is still valid today, highlighting the enduring commercial value of trademark rights. The products covered by the trademark registration included among others, soap and candles. Vinolia soap was used by first class passengers on the RMS Titanic and the RMS Queen Mary. The trademark has been managed on behalf of its owner by the same Curaçao-based company, G.A. Winkel Sr. Inc., since its initial registration in 1901. The mark is currently owned by Unilever.

How is it, then, that trademark protection took hold in such a small and remote, albeit beautiful, island?

INTERNATIONAL TRADE AND INTELLECTUAL PROPERTY

The answer lies in the twists and turns of Curaçao's colonial history. Trade has played an important role on the island since it was conquered by the Dutch West India Company in 1634. For more than a century, the island served as a transit hub for seafarers from all corners of the globe. And following the abolition of slavery in 1863, trade, agriculture and fishery became the mainstays of its economy. Moreover, the island's close political ties with the Kingdom of the Netherlands meant that political, legal and technological developments in Europe rippled down and shaped the local economy, including in the area of intellectual property.

Curaçao's trademark law emerged at the height of the industrial revolution. Technological advancements brought about significant improvements in global communications and boosted international trade at an unprecedented rate. To support global economic expansion, international policymakers concluded two major international agreements which remain in effect today. The Netherlands was one of the first countries to join the Paris Convention for the Protection of Industrial Property in 1883 and the Madrid Agreement Concerning the International Registration of Marks a few years later, in 1891. The Netherlands joined the Paris Convention on March 20, 1883, and the Madrid Agreement on March 1, 1893. As Curaçao was a constituent part of the Kingdom of the Netherlands, businesses on the island benefited from these historic international developments.

These international agreements sought to promote innovation, market order, economic growth and business development.

The Paris Convention, for example, introduced the idea of reciprocity at the international level. Under provisions governing "national treatment," the Convention requires member countries to grant the same protection to nationals of other contracting states as it grants to its own nationals. Similarly, it establishes the right of priority with respect to patents, utility models (where they exist), marks and industrial designs. This means that when an applicant has



The "Vinolia" trademark was first registered by the Vinolia Company Limited of London, on December 30, 1901 and is still valid today. It was used by first class passengers on the RMS Titanic and the RMS Queen Mary.

filed an application in one member country, he or she has a certain time period within which to apply for protection in any other member country, with all subsequent applications considered as if they had been filed on the same date as the first application. In practical terms, this gives applicants more time to decide in which jurisdictions they wish to seek protection for their intellectual property. The Paris Convention also sets out a number of common rules, again to help create a competitive landscape in which legitimate businesses may thrive.

Similarly, the Madrid Agreement spawned the development of the Madrid System (now governed by the 1989 Protocol to that Agreement) which now includes 101 members, covering 117 countries. That system offers businesses a cost-effective and user-friendly means of registering and managing their trademark portfolios internationally.

THE SIGNIFICANCE OF THE *MARIA CRISTINA* MARK

The registration of the *Maria Cristina* trademark signals the dawn of trademark protection in Curaçao; a system that has helped support the island's economy for some 125 years. Trademark protection has proven to be a cornerstone of the economy of this small but strategically-located Caribbean island. Ready access to trademark registration services enables companies at home and abroad to remain competitive and protect their interests in global markets.

Curaçao is home to a thriving financial services sector, and a well-educated, highly-skilled and multilingual workforce – Dutch, English, Papiamentu and Spanish are widely spoken on the island. Its strong connections with the Caribbean, Europe and the Americas, high-quality telecommunications infrastructure, and the fact that it lies outside the hurricane belt, make the island an attractive business location.



Moreover, Curaçao's current trademark law is fully aligned with international trademark registration practices. Applicants may submit their trademark applications in Dutch, English, Papiamentu, or Spanish.

And in the Caribbean, Curaçao is one of just a handful of countries – along with Antigua and Barbuda, Cuba and Dutch Sint Maarten – to implement the Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks (the Madrid Protocol) following the accession to that Treaty in 2003 of the Netherlands Antilles, of which Curaçao was formerly a part.

INTELLECTUAL PROPERTY AWARENESS IN CURAÇAO

Annual statistics produced by WIPO relating to the use of the trademark system around the world, in terms of both applications filed nationally and international filings via the Madrid System, show that on a per capita basis, Curaçao is well positioned by comparison with other Caribbean nations.

While these data are encouraging, there is still a long way to go in improving awareness about the role and importance of intellectual property rights such as trademarks across the island.

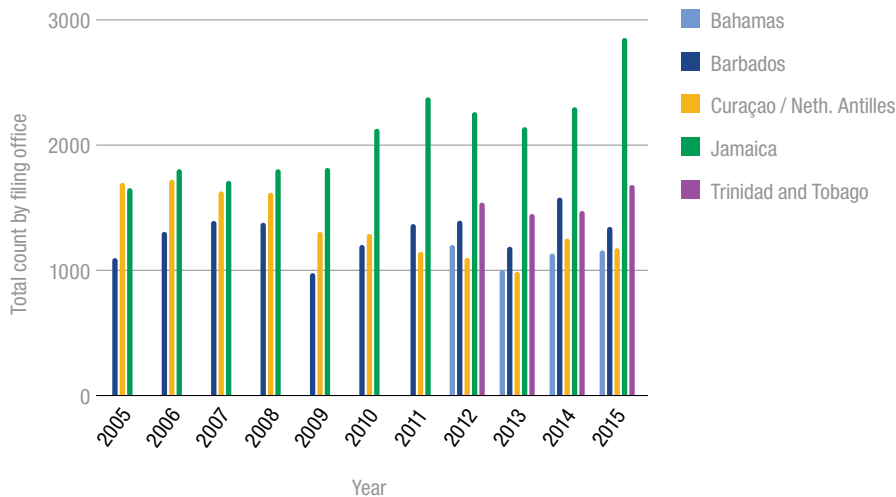
Local stories can underscore the strategic importance of trademark rights in advancing the island's economic development goals. For example, trademark protection is at the heart of the business strategy of thriving companies like Curaçao Laboratories Ltd., founded on September 16, 1948, which exports to international markets.

The company has a sizeable portfolio of both national and international trademark registrations, including "*Alcolado Glacial*," which is very well known in Curaçao and many other



Photo: Clint Physter / iStock Editorial / Getty Images Plus

Total trademark applications (nationally and via the Madrid system)



markets. *Alcolado Glacial* is a refreshing menthol-scented lotion. It is sold, along with a range of other related products, in over 25 countries, including Canada, Europe and the USA.

With such a rich history of trademark protection behind us, the aim of Curaçao’s Bureau for Intellectual Property is to support businesses at home and abroad to secure and manage their trademark portfolios both nationally and internationally. This will enable them to fully leverage the commercial value of their trademark rights, expand their businesses and support the development of Curaçao’s economy. Today, we lift a glass – of Blue Curaçao, of course – to the last 125 years, and look forward supporting the widespread uptake and use of our services to support business growth in the decades to come.

Emojis and intellectual property law*



Photo: koyar79 / iStock / Getty Images Plus

*This article is based on a longer forthcoming paper by Prof. Goldman called *Emojis and the Law*.

By **Eric Goldman**,
Professor of Law, Santa Clara
University School of Law,
California, and
Gabriella E. Ziccarelli,
Technology and IP attorney,
Washington, DC, USA

Everyone loves emojis, and why not? They are a fun and an increasingly ubiquitous way for people to express themselves. But despite their superficial frivolity, emojis can raise potentially complex and serious legal issues, including novel and complicated questions about intellectual property (IP). This article surveys how United States IP law protects emojis, and why such protection may be problematic.

WHAT ARE EMOJIS?

Emojis are small icons that people include in electronic communications to express an idea or an emotion. Emojis play a variety of communicative roles: they can function as a word substitute, a word complement (like the emphasis provided by an exclamation mark), an emotional signal, and more. Although most emojis are static images, they can be animated. Emojis were preceded by emoticons – icons comprised of keyboard characters such as the “smiley,” i.e., the keyboard characters :-). Emojis are subject to a wider range of depictions than emoticons because they can be literally anything, while emoticons are limited to keyboard characters.

Emojis can be divided into two categories: Unicode-defined emojis and proprietary emojis.

Unicode-defined emojis. The Unicode Consortium establishes standards for keyboard characters and, more recently, emojis. Unicode has assigned a unique number, a black-and-white shape outline and a short description to nearly 2,000 emojis. The Unicode standards enable emojis to be recognized across platforms. If both the sender’s and recipient’s platforms adopt a Unicode-defined emoji, a sender can send an emoji symbol that recipients on other platforms can recognize.

Despite the Unicode’s veneer of standardization, the emojis seen by users are not truly standardized because each platform implements Unicode-defined emojis differently. For example, some platforms adopt “house styles,” such as Google’s “blob”-shaped outlines (instead of the more typical circular shapes) for emojis depicting faces (what we call “face emojis”). Other platforms implement Unicode-defined emojis in strange or quirky ways, such as Apple’s depiction of the Unicode-defined pistol emoji as a neon green water gun. And even where platforms try to adhere to Unicode’s definitions, the way they each implement emojis still varies. For example, platforms have placed the cheese in the burger emoji in different locations – some above the burger, others below. Thus, virtually all implementations of the Unicode-defined emojis look different from each other, at least slightly.

Proprietary emojis. Platforms can also implement emojis that work only on their platforms. We call these “proprietary emojis” (other names include “stickers”). Even when proprietary emojis have similar designs to Unicode-defined emojis, they will not share the Unicode-defined numerical value for those emojis. Accordingly, when a proprietary emoji is sent outside the platform, it typically appears as a symbol such as a blank square indicating that the recipient platform did not recognize the character.



Photo: Clint Physter / CC BY-SA 4.0

Unicode does not adopt emojis covered by third-party intellectual property, such as trademarked logos or copyrighted designs. However, these may be produced by platforms or individuals as proprietary emojis. Examples of “branded emojis” include Twitter hashtag-triggered emojis (such as NFL emoji hashtags for game day) and celebrity emoji sets like Kim Kardashian’s “Kimoji.”

COPYRIGHT CONSIDERATIONS

Copyright may protect individual emojis, emoji sets and “house styles.”

Individual emojis. Individual emojis, whether proprietary or platform-implemented Unicode-defined, are presumptively copyrightable as graphical images. Nevertheless, most individual emojis will not receive copyright protection for at least three reasons.

First, some emojis are so simple that they do not have enough expression to constitute a work of authorship. Also, some emoji designs are so venerable that they are not original.

Second, emojis are subject to the merger doctrine, which eliminates copyright protection when an idea can be expressed only in a limited number of ways, and *scènes à faire*, which eliminates copyright protection for details that, in context, are common or expected. There are only so many ways to express certain emojis, especially because emojis’ small size makes it hard to depict many details. Also, emojis seek to communicate their ideas as universally as possible. To do so, the details of many emojis invoke standard cultural references associated with an emoji’s meaning, raising the odds that the details will be *scènes à faire*. Furthermore, emojis have developed some conventions, such as depicting face emojis in bright yellow, which are now likely *scènes à faire*.

Third, though Unicode’s IP policy is not crystal clear, Unicode likely either disclaims ownership or freely grants unrestricted usage of its emoji definitions. Platform-specific

implementations of Unicode-defined emojis are based on the Unicode outlines, so most implementations should be derivative works of Unicode’s definitions. However, some platform implementations, for example, Apple’s water gun depiction of the pistol emoji, vary so significantly from Unicode’s definition that they are not derivative works. For those emojis that qualify as derivative works, the platforms can only claim copyright for their incremental changes to the Unicode outline, which might be so inconsequential that they do not qualify for separate copyright protection.

In contrast, some proprietary emojis reflect significant creative judgments, in which case they will be better positioned to obtain copyright protection. Branded emojis may also be copyrightable when the source image is itself protected by copyright.

Even if an individual emoji qualifies for copyright protection, its scope of protection may be quite narrow. For example, many courts in the United States will apply the fair use defense broadly to authorize non-identical emoji implementations, and even identical depictions could qualify as fair use. Despite the graphical depictions of emojis, courts might feel like copyright law should not reach so deeply into how humans communicate.

We believe the fact that copyright *might* protect individual emojis has spurred platforms to create their own version of the same emojis. Does the world really need hundreds of slightly different emoji implementations of the smiley? No, but copyright law may motivate platforms to proliferate variations nonetheless.

Emoji sets. Emoji sets are collections of individual emojis. The sets may qualify for compilation copyrights if they have sufficiently original selection, arrangement and coordination.

House styles. House styles represent standard design choices implemented across an emoji set, such as the Google blob shape or a uniform non-yellow color for face

To reduce exposure to copyright or trademark infringement, many platforms are creating their own version of the same emojis. To avoid a proliferation of emojis, those responsible for regulating IP need to be circumspect in determining the scope of IP protection for emojis.



Photo: Plingebat / iStock / Getty Images Plus

emojis. A house style could provide the basis of compilation copyrights in emoji sets, and applying the style to individual emojis might help make those emojis copyrightable (or qualify as a derivative work, if they are a variation of the Unicode standard). House styles also could be part of a platform's trade dress.

TRADEMARK CONSIDERATIONS

But where emojis do not qualify for copyright protection, as outlined above, and when they distinguish goods and services in the marketplace, they can be protected as trademarks. In such instances, multiple parties could have coexisting trademark rights in the same emoji symbols for different classes of goods. We believe that hundreds of emojis, or emoji-like symbols, have been registered as trademarks.

However, the "use in commerce" requirement for trademark protection may prevent trademark protection for many emojis. For example, platforms typically do not make a "use in commerce" by providing free emoji sets that users can incorporate into messages. Also, where an emoji is used for its dictionary meaning (e.g., Bob's Car seeks a trademark registration for Bob's + a car emoji), the emoji is being used descriptively and is unlikely to qualify for trademark protection.

The possibility of trademark protection for standard and widely used emojis raises potential troubles for platforms. To reduce their trademark infringement exposure, platforms may deliberately implement emojis so that they are not substantially similar to protected trademarks – even if the platforms are not commercializing the emojis and merely providing emoji sets to their users. This effort to avoid possible trademark complications exacerbates copyright's emoji proliferation problem.

OTHER IP CONSIDERATIONS

Design patents. Emojis may be covered by design patents (industrial design rights) when they are an ornamental, nonfunctional design element of an item. For example, US patent D793,512 depicts a winky emoji on a water flotation device. However, platforms probably cannot obtain design patents for using emojis online because they serve the function of facilitating communication among users.

Utility patents. Emoji- and emoticon-related technologies are potentially patentable, and we are aware of at least four lawsuits involving such technologies. These include, for example, *WordLogic v Flesky*, which involves a patent that predicts words as mobile app users type, and whether predicting emoticons would violate the patent.

Publicity rights. Proprietary emojis can depict individual faces and other attributes uniquely associated with a single person. For example, bitmojis allow people to create emojis of themselves. Also, some celebrities have created emoji sets containing emojis that look like them. Any emoji depictions of individuals may require consent from the depicted person. Such consent is certainly required if the emoji is to be used as a brand on marketplace goods or services.

OWNING EMOJIS

Because emojis are eligible for IP protection, we expect that IP protection and assertions for emojis will increase as their popularity grows. IP protection for emojis, however, is a mixed blessing. While some emoji owners may profit from exploiting their IP, the rest of us may find it harder to communicate effectively with each other. Acquiring IP rights over emojis implicitly encourages unnecessary and undesirable variations of emoji depictions. It is as if each publisher intentionally spelled common words differently just to avoid any risk of infringement claims. Insofar as the linguistic role of emojis is analogous to words in communicative sentences, IP for emojis imposes a substantial tax on standard human communication. For these reasons, the institutions that regulate IP – courts, government registration offices and, as necessary, legislatures – need to be circumspect in determining the scope of IP protection for emojis.

*This article is based on a longer forthcoming paper by Prof. Goldman called *Emojis and the Law*.

The public lending right and what it does

Photo: tatyana_tomskikova / iStock / Getty Images Plus



The public lending right (PLR) allows authors and other right holders to receive payment from government to compensate for the free loan of their books by public and other libraries. At a time when authors' incomes from publishing are falling everywhere, PLR provides vital financial support.

By **Jim Parker**, Coordinator of the PLR International Network

The public lending right (PLR) is the legal right that allows authors and other right holders to receive payment from government to compensate for the free loan of their books by public and other libraries.

Maureen Duffy, writer and veteran of the authors that led to the right being introduced in the UK in 1979 after a twenty-year struggle, summarizes PLR as follows:

“First and foremost PLR upholds the principle of ‘no use without payment’. This is the basis for the concept of ‘fair remuneration’ which then carries over into photocopying and digital uses. It is based on the Universal Declaration of Human Rights by which we are entitled to receive income from any exploitation of our work. If it is claimed that this interferes with another universal right – to access to knowledge and culture – our answer is that it supports the creation of new work, and we do not ask teachers to work for nothing.”

Currently 33 countries have PLR systems. The lending right has been recognized in European Union law since 1992 and all but four of the countries with PLR systems are in Europe.

Denmark was the first country to establish a PLR system in 1946, followed by Norway in 1947 and Sweden in 1954. But the idea of a PLR actually dates from 1919 when the Nordic Authors' Association passed a resolution calling on governments to compensate authors for library lending of their books.

New Zealand was the first country outside of Europe to establish a PLR system in 1973, followed by Australia in 1974, and Canada and Israel in 1986.

Around 26 other countries recognize the legal right of authors to license the loan of their works but have not yet established systems to enable authors to receive PLR remuneration. This is often the case in countries with no collective management organization to administer a PLR system, or where book lending by public libraries – the essential component of most PLR systems – has been excluded in legislation from any PLR obligation.

The most recent PLR system to begin operation is in Poland where the first payments to authors for the loan of their books by public libraries were made in 2016.

THE LEGAL BASIS FOR PLR

Most PLR systems exist in Europe where member states of the European Union are required by law, under the Rental and Lending Right Directive (Directive 2006/115/EC), to provide authors with an exclusive right over the lending out of their works or at least to provide them with remuneration for the lending out of their works.

The Directive (first passed in 1992 and reconstituted in 2006) gives authors and other right holders an exclusive right to authorize or prohibit the lending of their works by libraries. Member states, however, may derogate from an exclusive right provided that they remunerate authors for the loan of their works. EU members must include public libraries in their PLR schemes but are permitted to exclude the lending of authors' works from other categories of library; they may also give priority to their national cultural objectives in establishing PLR schemes.

But, the lending right is not a requirement under international copyright law and there is no obligation for governments outside the European Union to set up PLR systems. As a consequence, the spread of PLR has been patchy. For example, there are, as yet, no PLR systems in Africa, South America or Asia. The only countries outside Europe currently operating PLR systems are Australia, Canada, Israel and New Zealand.

But things are changing. Malawi and Greece have recently introduced PLR legislation and are preparing to set up schemes; the Government of Hong Kong (SAR) has agreed in principle to introduce PLR; and draft copyright legislation in Turkey making provision for PLR awaits ministerial clearance before being submitted to parliament.

“First and foremost PLR upholds the principle of ‘no use without payment’.”

Maureen Duffy, novelist and non-fiction author

Photo: Photons / iStock Editorial / Getty Images Plus



Thirty-three countries currently have PLR systems, all but four of them (Australia, Canada, Israel and New Zealand) are in Europe.

And finally, PLR can also function as part of a country's support structure for its own culture and language. In several European countries, such as Denmark, Norway and Sweden PLR is only payable to authors writing in the national language(s) of that country. Similarly, the PLR systems in Australia and Canada support authors who are nationals of those countries.

HOW PLR OPERATES

Generally speaking, funding for PLR payments is provided by regional or central government and is not taken from library budgets. In the few cases where libraries pay for PLR, such as in The Netherlands where public libraries operate as independent entities, PLR is viewed by the library community as a legitimate charge that fairly compensates authors for the use of their works free of charge by the public.

There are two main approaches to PLR administration. First, where PLR is managed by a collective management organization alongside other rights subject to license like photocopying. This is the case in countries such as Germany, the Netherlands, Lithuania, Slovakia and Spain. And second, where PLR is a right to remuneration with its own legislation and is administered by a government body. This is the case in the UK, where the British Library administers the right. PLR remuneration systems can also be funded directly by government without any legislative basis. This is the case in Canada, Israel and Malta, but such arrangements can leave PLR systems vulnerable to closure.





In light of the expansion of e-book lending by public libraries, often PLR systems are now extended to include e-book loans.

DIFFERENT APPROACHES TO PLR PAYMENTS

Most commonly PLR-related remuneration is distributed to authors in the form of payments related to how often their works have been loaned to members of the public by libraries. Such a payment-per-loan approach is found in Finland, Germany, Malta, the Netherlands and the UK.

Alternatively, payment can be made to authors in line with how many copies of their books are held by libraries. This approach exists in Australia, Canada and Denmark.

Other approaches include relating payments to book purchases. This is the system in France where part of the overall PLR fund comes from a small payment made by publishers when they sell a book to a library. The remaining part of the PLR fund is made up by a small fee paid by the government for every registered library user.

Many countries combine elements of these different approaches. For example, in Slovenia PLR payments are made to authors for the loan of their books but PLR funding is also used to provide authors with study grants and scholarships.

WHO RECEIVES PLR PAYMENTS?

But beyond writers, other individuals, such as illustrators, translators, editors and photographers (which may variously be considered authors in different jurisdictions), contribute to the production of a published work and as such, commonly qualify for PLR payments. And in several countries publishers also share PLR payments with authors.

PLR currently applies in many countries both to printed books and various audiovisual materials, including, audio books, loaned by libraries. In these countries a wider range of creators are eligible for payment, including composers, producers and narrators of audio books.

E-book lending is a rapidly growing feature of public library activity across the world. Following a decision by the European Court of Justice in 2016 (*Vereniging Openbare Bibliotheek v Stichting Leenrecht* – Case C-174/15) the Lending Right Directive is deemed to cover the loan of e-books on the basis of one copy per user (the copy can only be loaned again when the e-book is no longer accessible to the previous borrower). The UK

has now extended its PLR system to include e-book loans where the law provides for PLR payment while allowing publishers to propose a variety of licensing options. A system of payment for e-book loans will also be introduced in Denmark this year. Beyond Europe, Canada included e-books in its PLR system in 2017.

WHY PLR IS IMPORTANT FOR AUTHORS

PLR payments make a real difference to authors' lives.

In an age when authors' incomes from publishing are falling everywhere, PLR provides vital financial support. For example, in the UK, 24,000 writers, illustrators and translators receive payments of up to a maximum of GBP 6,600 each year. For many, particularly writers who are not among the bestsellers, this is their biggest source of income.

And PLR can be a life-saver for established and retired writers with long backlists of published works which remain available for loan in public libraries even when their works are out of print.

In addition to paying authors for the loan of their works by public libraries, PLR funding can also be paid out as grants provided for research and travel, or as pensions. In some countries it can also be bequeathed upon an author's death to his or her family for up to 70 years.

PLR is not just restricted to the loan of authors' works by public libraries. In Australia, for example, the Educational Lending Right makes payments to authors for books featuring in the collections of school libraries. This is very popular among children's writers. And in Germany higher education libraries are included in the PLR.

The PLR also generates other benefits for authors. For example, authors in the United Kingdom find that data generated by the PLR office on how often their books have been borrowed from public libraries are a great morale booster – especially when the loans relate to older books that are no longer available in the shops. "PLR is about more than money, though of course that is welcome. Getting my cheque each year is a reminder that people want to read my books rather than simply own them," notes author, Tracy Chevalier.

THE PLR INTERNATIONAL NETWORK

The PLR International Network brings together those countries with PLR systems to facilitate the exchange of best practices and provide advice and technical assistance to countries looking to set up their own PLR systems for the first time.

An introductory guide to the PLR, guidelines on PLR best practice and how PLR operates in each country are available on the website of the PLR International Network at: www.plrinternational.com.



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/

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