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Helping under-resourced inventors navigate the patent system

By **Giulia Ragonesi**, Patent Law Division and **Edward Harris**, Communications Division, WIPO



Photo: Courtesy of Mr. Hoyos Barón

For Antonio Gonzalo Hoyos Barón, tragedy was the mother of invention. For years, the forensic scientist heard about health workers waiting at rural health clinics across Colombia for ambulances that never arrived: the rushing vehicles hydroplaned while cornering on rain-slicked roads before foundering and, in one instance, flipping over and killing a young female patient.

Hoping to help solve this problem, Mr. Hoyos Barón began in the mid-1990s to work on a claw-like metal contraption to be mounted on vehicles traveling during South America's rainy season, providing lateral stability on wet and muddy roads. Work progressed slowly. But when a prototype had the desired effect, Mr. Hoyos Barón was thrilled. "Imagine seeing something you've been dreaming of for such a long time becoming reality and with the potential to be so useful," he says.

That potential, however, remains largely untapped, because taking it to the next step means obtaining the patent protection that would attract investors and help commercialize the product. Lacking what he calls "*musculos financieros*" – financial muscle – for the costs that often include attorneys' fees, Mr. Hoyos Barón was stuck – like many inventors who lack financial means.

Colombian inventor Antonio Gonzalo Hoyos Barón (center), one of the first beneficiaries of the Inventor Assistance Program, with his *pro bono* attorneys from Baker & McKenzie.

SUPPORT IS IN SIGHT

Help is on the way. A new WIPO-led effort is helping match Mr. Hoyos Barón and other under-resourced inventors and small businesses in developing countries with intellectual property (IP) lawyers willing to work for free to help the inventors better navigate the patent-filing process.

The Inventor Assistance Program (IAP) was formally launched globally on October 17, 2016, following successful pilot projects in Colombia, Morocco and the Philippines. The IAP is a WIPO initiative in cooperation with the World Economic Forum and an array of other sponsors, including the Inter-American Association of Intellectual Property (ASIPI), the International Federation of Inventors' Associations (IFIA), Novartis, Qualcomm, Pfizer, the European Patent Institute (EPI) and the United States Federal Circuit Bar Association (FCBA).

THE PROBLEM

The exact number of under-resourced inventors around the world is unknown, but data show that up to 60 percent of patent applications filed by locals in many developing countries are abandoned or rejected even before they are examined as to substance because very few people in these countries know their way around the patent system. "A lack of access to often costly legal expertise is a real, but surmountable, obstacle to a great deal of innovation that can benefit societies," explains Marco Aleman, Acting Director of WIPO's Patent Law Division, which oversees the IAP.

The IAP's recent launch is timely, as it comes amid a rising understanding in legal communities around the world of the importance of *pro bono* work, says Mr. Aleman. While the United States has the most highly developed pro-bono culture in the world, lawyers in other countries are increasingly donating their time to help poorer people navigate legal systems, and IP systems in particular.

PROMOTING PRO BONO IN THE FIELD OF IP

Still, in countries where lawyers are able to undertake pro bono work outside their areas of expertise, many turn to civil rights, criminal law or other areas of law – finding it personally fulfilling, or thinking it will have the greatest impact. Indeed, until the establishment of the IAP, there was little opportunity for IP lawyers to undertake pro bono work to help innovators overcome the issues they face in turning their ideas into marketable products.

"We really need to encourage *pro bono* work in general, but particularly *pro bono* in IP," Mr. Aleman says. "This is a challenge because the concept is quite new in many jurisdictions."

For IP lawyers, actually finding under-resourced inventors can be difficult, since these innovators are often outside the IP ecosystem and rarely seek out free legal advice. This is where the IAP can help – by connecting the two parties.

"Our aim is to build up a network of lawyers offering their services on a *pro bono* basis and to link them up with under-resourced inventors. These people often live in the same city, but have little or no opportunity to meet," says Mr. Aleman. "These lawyers can help under-resourced inventors navigate the patent process by providing the technical advice required to avoid the pitfalls that can result in a patent application not making it beyond the first pass."

HOW THE IAP WORKS

The aim of the IAP is to put under-resourced inventors in contact with *pro bono* patent attorneys. Each participating country sets up a national screening board. These are usually embedded within national Technology and Innovation Support Centers (TISCs) – (see box). In consultation with the national IP office, the board establishes eligibility criteria for inventors' participation in the program and identifies suitable candidates. Once eligible inventors have been selected, the national IAP coordinator informs the beneficiaries and WIPO, whose role it is to identify an appropriate IAP-registered *pro bono* patent attorney. The chosen attorney then meets with the inventor to begin

About TISCs

The WIPO Technology and Innovation Support Center (TISC) program provides innovators in developing countries with access to locally based, high-quality technology information and related services, helping them to exploit their innovative potential and to create, protect and manage their IP rights. More information about the WIPO TISC program is available at www.wipo.int/tisc.

working on the case. As the central coordinator of the IAP, WIPO is working to expand its roster of *pro bono* patent attorneys and is actively promoting the program among its member states and the public.

BEST PRACTICES TO AVOID CONFLICTS OF INTEREST

The IAP embraces established best practices to avoid any conflicts of interest and guarantee quality service. For example, before accepting a case a volunteer patent attorney has to ensure there is no possible conflict of interest in the same way he or she does when handling cases for fee-paying clients. Similarly, the quality of the service provided by a patent attorney doing *pro bono* work must be the same as that provided to fee-paying clients. This is a guiding principle of the program and one which is accepted by all attorneys that sign up to it. Any other potential conflicts are handled in the same way as those that may arise in relation to fee-paying relationships.

To the same end, IAP company sponsors have no knowledge of the substance of any patent application handled by IAP *pro bono* attorneys. As outlined in the IAP's *Guiding Principles*, their role is to promote the IAP among their internal networks of preferred firms, and to help recruit qualified counsel to serve as *pro bono* patent attorneys under the program. Corporate sponsors are also called upon to identify and help secure opportunities to support the IAP financially, for example by helping to fund national or regional training sessions, coordination meetings, or marketing efforts.

IN SUPPORT OF NATIONAL INNOVATION GOALS

The IAP also promises to support national innovation goals, enhance national patent systems and contribute to economic growth. In today's globalized world, the exclusive rights conferred by a patent guarantee the title holder a privileged position in the market and help attract much-needed business investment. Helping local inventors to obtain a patent gives an invaluable helping hand in the process of turning their creativity into a business opportunity.

So far, the IAP has helped 13 inventors in the three pilot countries, with inventions including a portable espresso-coffee maker and a device that turns home waste into fertilizer. The invention that has advanced the furthest in the patent process is a machine and a process for obtaining animal food from plant waste. This is already the subject of an international patent application (PCT/

IB2016/055056) under WIPO's Patent Cooperation Treaty (PCT), which offers a streamlined way of obtaining patent protection in multiple jurisdictions.

In setting up the IAP, WIPO and the World Economic Forum took inspiration from the 2011 America Invents Act which requires (under Section 32) the United States Patent and Trademark Office (USPTO) to assist IP law associations across the country in establishing *pro bono* programs for patent-related services in support of under-resourced inventors and small businesses. The IAP is designed to meet a similar need in developing countries, helping under-resourced inventors to protect their products in home markets and internationally in selected jurisdictions via the PCT.

Importantly, the IAP seeks not only lawyers in the developing countries where the inventors live, but also in richer countries where those inventors might ultimately seek international protection for their invention. A US-based attorney could, for example, ultimately help an overseas IAP-sponsored inventor like Mr. Hoyos Barón engage with the USPTO.

OPPORTUNITY KNOCKS

Former USPTO Director David Kappos, Chair of the IAP Steering Committee, explains that the IAP is "about bringing specialist skills aligned with what other human beings really need and can't get access to, which is access to the innovation system of our world... Simply put, it creates opportunity – economic opportunity and societal opportunity – for people who have great ideas but just don't happen to have huge financial resources," he says. "It provides an entrance ramp to the IP system."

Mr. Kappos sees a large role for the program. "Eventually, I hope that it will be able to serve inventors all over the world, in both developing and developed countries, who have good ideas but don't have financial resources. The plan is that every human with a great idea gets a chance to make something of it."

BENEFITS FOR PRO BONO IP LAWYERS

Pro bono IP work for IP lawyers is not simply a selfless act, but can actually generate benefits for legal professionals themselves.

Pro bono work like that sponsored by the IAP "not only gives a young lawyer the opportunity to grow and to advance; it gives the young lawyer an opportunity to give



Photo: WIPO

At the global launch of the IAP in October 2016, WIPO Director General Francis Gurry (above) thanked all those that are contributing to the success of the IAP. He said that the IAP was an extremely positive initiative that promised to help create innovative enterprises, employment and economic growth.

of herself or himself to the society in which they live in a very meaningful way,” said Judge Jimmy V. Reyna of the United States Court of Appeals for the Federal Circuit at the IAP’s global launch event.

“But more than that, it affords the opportunity to individuals to have access to the legal system, in this case to the patent system, so that they can expand technology, innovation and creativity,” he said. “And I do think that creativity and innovation fulfills a basic desire and human need to grow and to develop and to cause a small positive change and the next day to have another change to build on top of that, and then another one on top of that – and that’s the spark of human development,” he said. “That’s a long way from *pro bono* to human development, isn’t it? But that’s it in a package.”

That’s the hope for Mr. Hoyos Barón, who says that successful inventors need four traits: intelligence, passion, persistence and a pinch of craziness.

After years of effort, his younger working-age children are facing uncertain job prospects in a poor global economy and hope their father’s invention might one day turn into a family business. This change in heart – they previously thought his invention was just a pipe dream – has come about thanks to Mr. Hoyos Barón’s experience with the IAP. “When the World Intellectual Property Organization contacted me in the framework of the Inventor Assistance Program,” he says, my kids “understood that my invention fulfilled a practical need and had potential after all.”

More information about the IAP is available at: www.wipo.int/iap.

Breakthrough technologies: robotics and IP

By **C. Andrew Keisner**, Consultant,
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**This article is derived from the
World Intellectual Property Report
2015 – Breakthrough Innovation
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The industrial robot market is set to increase to around USD 33 billion by 2017.

Robotics and artificial intelligence (AI) have huge potential to transform many aspects of our lives. Recent trials with humanoid robots in supermarkets, schools, hospitals and retirement homes in Europe, the United States and Japan give a sense of this. Hollywood movies like *Ex_Machina* and *Her* have also attracted public attention, raising questions about the potential superiority of robots and AI. But how is innovation in robotics taking place, and what is the role of intellectual property (IP) in that process?

Robotics, the field of technology that drives the development of robots, has played a role for decades in automotive factories, construction sites, schools, hospitals and private homes. But more recently, newer fields of research, including AI and sensing, have combined with robotics to produce advanced autonomous robots with many more potential applications.

THE IMPACT OF ROBOTS

Robots are already having a significant impact on manufacturing processes in the automotive and electronics sectors. They are also increasingly being used in agriculture, mining, transport, space and sea exploration, unmanned surveillance, health, education and many other fields.

Robots can increase labor productivity, reduce production costs and improve product quality, and in the service sector have spawned entirely new business models. Robots also contribute to human welfare by eliminating the need to do strenuous or dangerous work, by supporting an ageing population and by making sustainable transport a reality.

The industrial robot market, including the cost of software, peripherals and systems engineering, is set to increase to around USD 33 billion by 2017.

Asia (in particular, China, the Republic of Korea and Japan) is the world leader in global robotic sales, followed by Europe and North America.

The economic gains derived from using robots are directly linked to replacing part of the workforce. While the productivity gains generated by robots help keep firms competitive and create higher-wage jobs in some countries, the overall impact of robots on employment remains uncertain, and quantifying the economic benefits of their use remains a challenge.

THE ROBOTICS INNOVATION SYSTEM

Robotics innovation is concentrated in a small number of countries and clusters typically centered around leading universities. Examples include Boston (United States), the Île-de-France (France), Odense (Denmark), Zurich (Switzerland), Bucheon (Republic of Korea), Osaka (Japan) and Shanghai (China). These clusters thrive on the interface between public and private research, with firms commercializing innovations developed partly through long-term research in universities and other public research organizations.

Most robotics-related innovation and company startups are found in high-income countries, with the exception of China, which hosts some of the fastest-growing robotics companies such as DJI (a drone company), Siasun and Estun.

The robotics innovation ecosystem is highly dynamic, research-intensive and collaborative and is becoming increasingly complex. It involves an expanding network of specialists, research institutions and technology-intensive firms, large and small, and brings together know-how from a diverse range of fields to deliver ground-breaking inventions built on the latest developments in materials science, motive power, control systems, sensing and computing.

The collaborative nature of robotics innovation is due in part to the extremely complex challenges presented. Often, companies simply do not have all the required expertise in-house and have to look outside to secure it, for example by establishing joint development agreements with specialized robotics companies.

Industrial robotics is capital-intensive. Research can take years to bear fruit, but university spin-off companies formed around different breakthroughs are driving the sector's evolution.

Larger, established companies like ABB (Switzerland), Kawasaki Heavy Industries, Yaskawa and Fanuc (Japan) and KUKA (Germany) are also very active in robotics R&D. Large companies active in defense, aerospace and security have also gained expertise in robotics, along with consumer electronics firms like Samsung (Republic of Korea) and Dyson (United Kingdom).

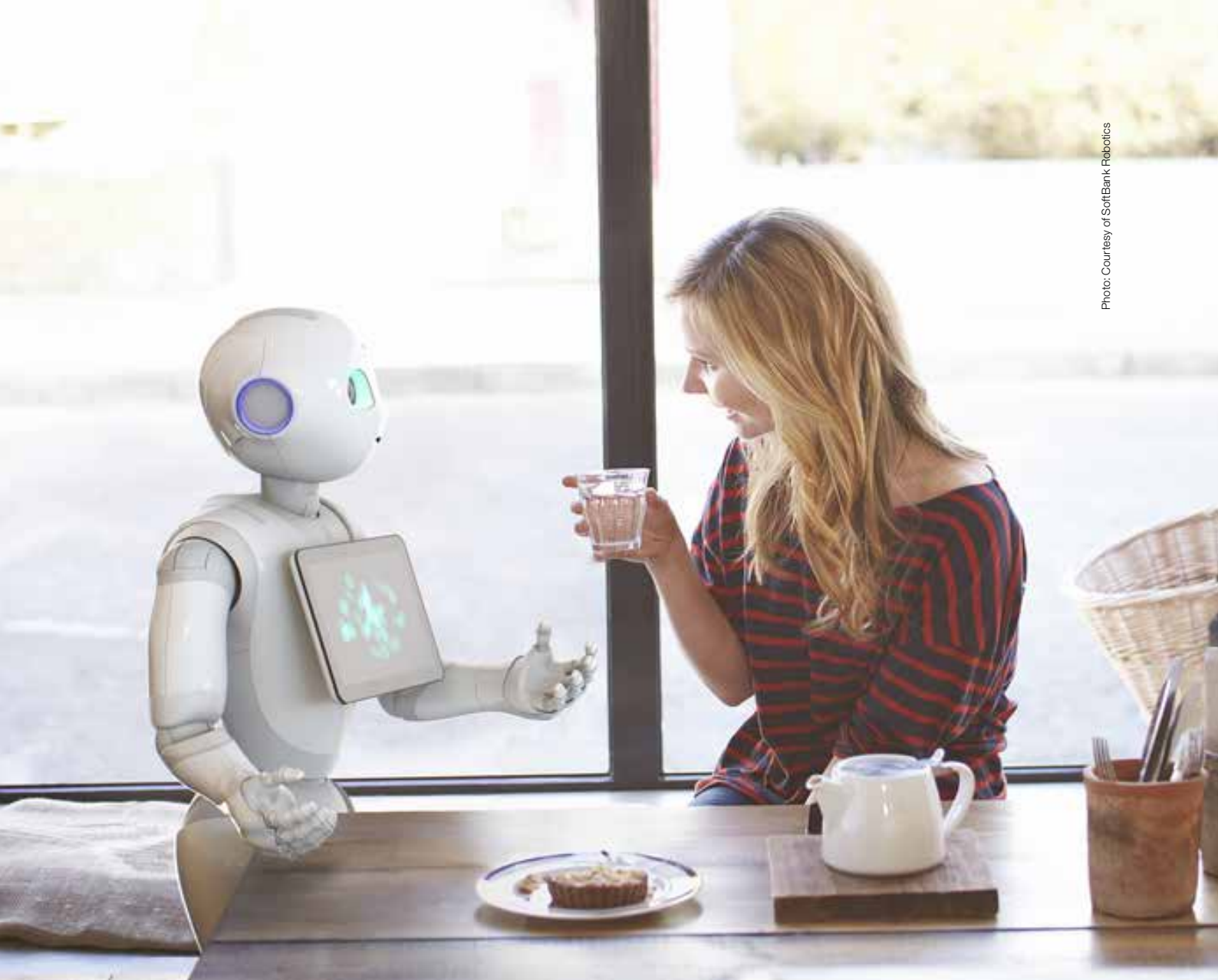


Photo: Courtesy of SoftBank Robotics

Pepper (above), developed by SoftBank Robotics, was launched in 2014 and can read human emotions. It is not a functional robot but is intended to “make people happy” and enhance their lives.

What exactly is a robot?

Generally speaking, a robot has the ability to interpret its environment and adjust its actions to achieve a goal. The first modern-day robots were invented for programmed automation to speed up industrial manufacturing processes. But robots have now become fully autonomous systems that can operate and make “decisions” without human interaction.

By 1970 robotic manufacturing was widespread across the automotive industry in the United States and Japan, and by the late 1980s Japan had become the world leader in the manufacture and use of industrial robots. Since the 1980s, when the use of industrial robots in automotive and other industrial production lines became commonplace in the United States and Japan, robotic mechanical parts have become ever more sophisticated and increasingly autonomous. New materials and cutting-edge breakthroughs in artificial intelligence, mechatronics, navigation, sensing, object recognition and information processing have transformed robotics into a multidisciplinary field. Robots are becoming increasingly data-driven and linked over intelligent networks, such as those being developed for self-driving vehicles and drones.



And as robotics becomes more reliant on connectivity and ICT networks, firms like Amazon, Google, Facebook, Infosys, Alibaba and Foxconn are also joining the fray. Many companies in many sectors are beginning to recognize the benefits of robotics, which are increasingly at the heart of business strategies.

ROBOTICS INNOVATION AND INTELLECTUAL PROPERTY

As more players enter the robotics ecosystem and as innovation focuses on more advanced robotics, companies are increasingly turning to the tools of the IP system to safeguard their interests.

Compared to the standard industrial robot innovation of the past, robotics innovation today involves more actors, more technology fields and many more patent filings. Offensive and defensive IP strategies are becoming more commonplace.

Patent protection can be particularly important in this field, given the capital-intensive nature of R&D prior to commercialization and the need for regulatory approval. It allows companies to recoup their investment and helps them secure a competitive commercial advantage. It is particularly useful in protecting inventions that can easily be reverse engineered.

A solid patent portfolio makes it possible to license and cross-license technologies, and thereby strengthen business relations, generate new revenue streams and, in some cases, help avoid litigation. It can also help small firms attract much-needed investment.

Robotics patenting surged in the 1980s, when widespread factory automation resulted in a quadrupling of patent applications (see Figure 1). Patent applications surged again in the mid-2000s as more advanced robotics came on stream.

Automotive and electronics companies remain the largest filers of robotics patents but new actors are emerging. University–industry collaboration remains strong as the stock of patents held by universities and public research organizations offers significant opportunities for commercialization. Extensive cross-fertilization of research remains a feature of the robotics innovation ecosystem, but there is evidence that patenting is supporting the specialization of firms. Such specialization is important in driving the sector's continued evolution.

Many robotics companies are using patent documents to find out about the latest technological developments, to gain insights about competitors' strategies and to monitor whether competitors' patent claims need to be challenged.

TRADE SECRETS AND ROBOTICS

The technological complexity of robotics systems means that trade secrets are often the first option for companies seeking to protect their innovations. This makes sense for a number of reasons:

- Few people have the expertise to reverse engineer these complex systems.
- Highly expensive robots are very difficult to get hold of, making reverse engineering practically impossible.
- Many smaller companies want to avoid the cost of filing patent applications.
- Historically, companies seeking to patent protect their technological advances – especially those decades away from use in market-ready products – spent a lot on patenting but reaped little reward because by the time they were commercialized many of the patents had expired.
- In the robotics sector employee mobility is high, so many companies apply restrictive covenants when employees move to competitors.
- Uncertainties surrounding the patentability of software in different jurisdictions could further tilt the balance in favor of trade secrets.

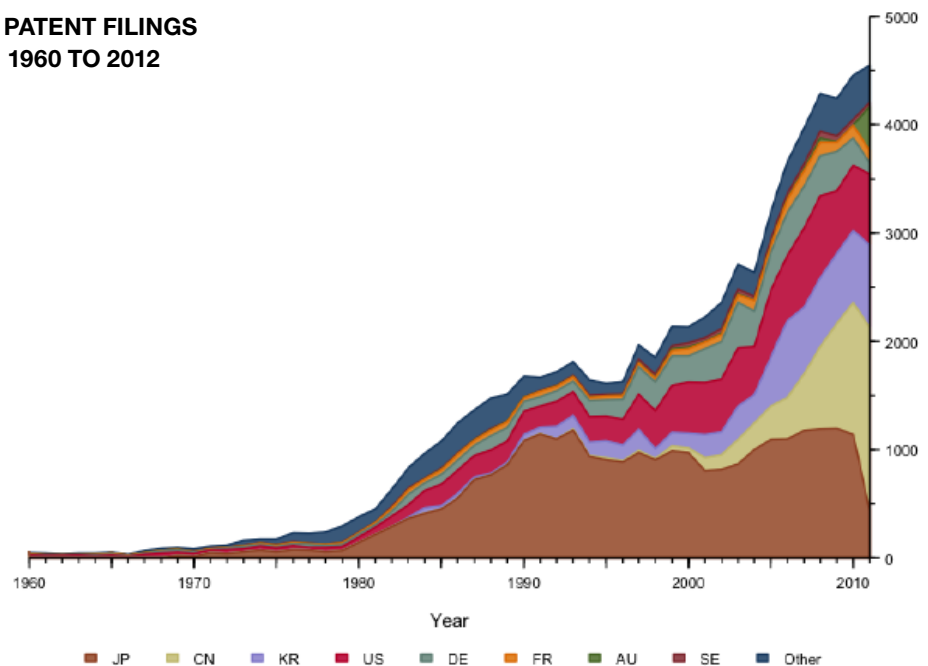
Next to patents, industrial designs that protect a robot's appearance – its shape and form – also play an important role in improving the marketability of products and helping firms appropriate the returns on their R&D investments.

Being first to market, a strong after-sales service, reputation and brand have all been critical to the success of past robotics innovation, and remain so today, especially as the industry moves towards developing applications with direct consumer contact. Strong brands are particularly important when selling directly to end-users. That is why most robotics companies trademark their company names and those of their robots.

Copyright, the traditional means of protecting software code, is also relevant to robotics. Under the 1996 WIPO Copyright Treaty, circumventing a technological protection measure to access copyrightable computer code is not permitted. This is of particular relevance to the

FIGURE 1: NUMBER OF FIRST PATENT FILINGS WORLDWIDE FOR ROBOTICS: 1960 TO 2012

The number of first patent filings worldwide in the robotics space between 1960 and 2012. The graph shows the emergence of the Republic of Korea in the early 2000s and of China more recently.



robotics industry because most companies employ electronic barriers to restrict access to their computer code.

ROBOTICS PLATFORMS AND THE COEXISTENCE OF IP AND OPEN SOURCE

Today's robotics innovation ecosystem is made up of a combination of open and competitive (proprietary) approaches to IP management.

At the pre-commercial stage, a lot of innovation is built around collaborative, open platforms like the Robot Operation System (ROS). These platforms invite third parties to use and/or improve existing content under open licensing arrangements (e.g. Creative Commons, GNU General Public License or a free software license). This allows for rapid prototyping and experimentation. Collaborative platforms enable users to share substantial up-front investment costs, avoid duplication of effort and perfect existing approaches. Such platforms exist for both software and hardware development.

But when innovative firms invest in their own R&D efforts, they tend to protect their inventions more vigorously, especially when they are used to differentiate end-products. As the commercial stakes rise, it will be interesting to see if robotics companies change their approach to IP management.

WILL ROBOTS EVER HOLD RIGHTS IN THEIR INVENTIONS OR CREATIVE WORKS?

In future, robots are likely to produce new solutions to problems and in so doing to create intangible outputs that could, at least in theory, be perceived as IP. This could raise interesting questions as to the boundaries of the current IP system. Do objects, software code or other assets created autonomously by a robot qualify for IP protection? If so, how? And who would own these IP rights? The producer? The user of the robot? The robot itself?

Some countries, for example Japan and the Republic of Korea, are actually considering extending rights to machines. In New Zealand the law suggests that original works, even if created by software, robots or AI systems, are protectable under New Zealand's 1994 Copyright Act. However, such works would belong not to the robot or intelligent system, but to the person(s) who created or utilized the robot or intelligent system that created the work. In other jurisdictions, like the United States, it seems unlikely that a work created by a robot would qualify for copyright protection. Already, contradictory rules relating to the protection of robot-generated IP are emerging among nations that are playing a significant role in robotics development.

Autonomous robot creation and the question of who owns IP rights in creations produced by robots will surely be a matter of much future discussion.

African entrepreneurs lead the way in climate change adaptation

By Maëli Astruc,
Global Challenges Division, WIPO

Tech Innov's innovative tele-irrigation system enables farmers to better manage their water resources at any time and from anywhere using their mobile phone.





Photo Courtesy of Tusk Engineers

Photo: Courtesy of Tusk Engineers



The inventor of the bio-latrine, Rachael Nabunya Kisakye, making an inspection chamber cover for the bio-latrine.

About WIPO Green – The Marketplace for Sustainable Technology

WIPO GREEN is an interactive marketplace that promotes the innovation and diffusion of green technologies. It does this by connecting technology and service providers with those seeking innovative solutions. More information is available at: www3.wipo.int/wipogreen.

Developing and deploying green technologies to mitigate and adapt to the worst effects of climate change are crucially important dimensions of efforts to build resilient and sustainable societies. They are particularly important in Africa, one of the continents that will be most adversely affected by climate change.

The good news is that many initiatives are being developed across the continent to meet the formidable challenges that lie ahead. Businesses are leading the way in tackling local challenges across Africa. This is evident from an exhibition showcasing Africa-focused green technologies that was held on the sidelines of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP22) in Marrakesh in November 2016.

The exhibition was co-organized by WIPO's green technology platform, WIPO GREEN (see box), the French National Institute of Industrial Property (INPI) and the Moroccan Industrial and Commercial Property Office (OMPIC). It featured the innovations of 44 small and medium-sized enterprises (SMEs) that are based in Africa or focused on the African market.

"Participation in the exhibition has given these companies international exposure. This networking opportunity contributes to their technology promotion efforts and speeds up the deployment in areas where solutions are most needed," notes Anatole Krattiger, who oversees the WIPO GREEN platform at WIPO.

"This exhibition gave me the opportunity to show Africans that we have the capacity to find solutions to the problems we are facing. All we need is to connect with each other and give ourselves the confidence that we can succeed," says Isidore Nzeyimana, CEO of Tekatangije in Rwanda, one of the exhibitors.

Against the backdrop of the recent entry into force of the landmark Paris Agreement (see box on p.17), and alongside important policy discussions at COP22 to further galvanize the global response to the threat of climate change, the exhibition demonstrated in very practical terms what businesses are doing on the ground to drive innovation to mitigate and adapt to climate change.

More than 180 companies applied to take part in the exhibition, with 80 percent of them coming from 22 African countries, reflecting the dynamism of African SMEs in



Photo: Courtesy of Tusk Engineers

Biogas digester under construction. Recognizing the interrelationship between soil degradation, inadequate sanitation and clean energy, Rachael Nabunya Kisakye of Tusk Engineers has developed a bio-latrine, an environmentally-friendly toilet that is connected to a biogas digester that converts human waste into a quality fertilizer for agriculture, and biogas for cooking, heating and lighting.

developing technologies for clean energy, agriculture and water. These have been identified as priority areas by the UNFCCC.

The following two cases offer an example of the types of technologies that are under development in Africa to tackle local environmental challenges. The first relates to the development of a bio-latrine in Uganda and the second to a mobile phone-enabled tele-irrigation system from Niger.

BIO-LATRINE TECHNOLOGY FROM UGANDA

Soil degradation, inadequate sanitation and lack of access to clean energy are important challenges facing African farmers and those living in rural areas. According to the Bill and Melinda Gates Foundation, 40 percent of the world's population lacks access to adequate sanitation facilities, a situation which contributes to around 700,000 children dying from diarrhea each year. At the same time, the use of solid fuels such as wood, crop waste, charcoal and coal for cooking and heating contributes to high levels of household air pollution, causing 4.3 million premature deaths every year according to the World Health Organization (WHO).

Recognizing the interrelationship between soil degradation, inadequate sanitation and clean energy, Rachael Nabunya Kisakye, project engineer at the Ugandan company Tusk Engineers, has developed a bio-latrine.

“The bio-latrine concept was inspired by the heavy burden borne by African women to bring food to the table when in fact they have a source of energy that is readily available but largely unexploited. The solution is the bio-latrine,” Ms. Nabunya says.

THE CONCEPT

“A bio-latrine is an environmentally friendly toilet that is connected to a biogas digester that converts human excrement into a quality fertilizer that is safe to handle and can be used for agriculture. In the same process, combustible gas (biogas) is also produced and can be used for cooking, heating and lighting. This complete system addresses energy, sanitation, environment and agricultural production in a single cycle, and we are very proud of that,” Ms. Nabunya explains. Her bio-latrine improves hygiene, community sanitation, living standards and the environment in general, through better waste management and the production of high-quality fertilizer and biogas.

Biogas digesters and bio-latrines are located in communal areas – community centers, schools, churches and hospitals – to ensure ready access. Single units are also set up in locations that serve 20 or more households, with each family contributing to the total monthly cost of running the bio-latrine. “Each homestead is connected to the biogas digester through an electronic gas meter that relays information to a central processor for billing purposes,” Ms. Nabunya notes.

USING AVAILABLE RESOURCES TO TACKLE LOCAL CHALLENGES

The bio-latrine is made from a combination of off-the-shelf products, including biogas digesters from India and China, as well as biogas lamps, pressure gauges and stoves from China.

With aspirations to develop a perfect digester, the company is planning further developments to enhance the performance of its bio-latrine. “We plan to introduce an agitator to facilitate proper digestion and remove maximum biogas from the digester. We will also introduce a system that automatically circulates water from the slurry back to the mixing chamber. There are still many technical challenges to overcome before we come up with our ‘dream’ bio-latrine, but when we do we intend to protect our innovation,” Ms. Nabunya says, noting that the company is documenting all aspects of the bio-latrine’s design, operation and maintenance. “If our innovation is copied at this stage, there are no guarantees of performance,” she warns.

“Innovation is about utilization of the available resources like technologies, manpower and machines to address our immediate challenges. It is not only about being new; it is also about having the capacity to address local challenges and making this world a better place to live in,” Ms. Nabunya observes.

ASPIRATIONS TO GO NATIONWIDE

The company is currently testing its technology within communities and has built and connected bio-latrines to more than 150 domestic biogas digesters and 40 institutional digesters ranging in size from 6 to 70 cubic meters of fixed dome design.

“We are currently working in Gulu in North Uganda, where we have connected a 50-cubic meter digester to 10 bio-latrine stances,” Ms. Nabunya says. “Our aim is to reach all of Uganda’s rural population.”

With a 45-cubic meter bio-digester, it is possible to generate 15 cubic meters of biogas in 24 hours. “The biogas stoves currently on the market consume 0.15 cubic meters of biogas per hour at maximum opening. That means the 45-cubic meter bio-latrine has an installed capacity of 100 appliance hours providing biogas to over 20 families,” Ms. Nabunya explains.

Having completed installation of its demonstration sites, Tusk Engineers is now looking to roll out a market awareness campaign across Uganda. “Our campaign will focus in particular on Uganda’s off-grid market to ensure that our technology is widely adopted and used,” Ms. Nabunya says.

A SMART WATER MANAGEMENT SOLUTION FROM NIGER

Mobile telephony has transformed the lives of millions of Africans. Half the continent’s inhabitants have a mobile phone, and mobile innovation is one of its fastest-growth sectors, particularly in the areas of e-health and e-banking. But disruptive “e-green” innovations are also emerging with significant potential to promote more efficient use of natural resources.

Abdou Maman, an ICT expert from Niger and the founder of Tech Innov, has developed a solution that enables farmers to control their irrigation systems remotely using their mobile phone.

Water scarcity is a major challenge and improving agricultural practice, including for irrigation, is a top priority for many countries in the region, as indicated in the UNFCCC’s Climate Technology Centre and Network technology needs assessment reports.

“From a very young age I realized that the way farmers irrigated their land was rudimentary and relied on physical energy,” says Mr. Maman. “This is still the case today, despite the availability of advanced technologies. As an ICT enthusiast, I decided to draw on the region’s natural and technological strengths to solve the recurring difficulties surrounding irrigation.”



Photo Courtesy of Tusk Engineers

Ugandan company Tusk Engineers is currently testing its technology within communities and has built and connected bio-latrines to more than 150 domestic biogas digesters and 40 institutional digesters. The company's aim is to "reach all of Uganda's rural population."

About the Paris Climate Change Agreement

The landmark Paris Climate Change Agreement entered into force on November 4, 2016. So far, according to the UNFCCC, it has been signed by countries that account for over 55 percent of global greenhouse gas emissions.

UNFCCC's Executive Secretary, Patricia Espinosa, heralded the Agreement as "an extraordinary political achievement which has opened the door to a fundamental shift in the way the world sees, prepares for and acts on climate change through stronger action at all levels of government, business, investment and civil society."



Photo: Courtesy of Tech Innov



Photo: Courtesy of Tech Innov

Abdou Maman's tele-irrigation system integrates and synchronizes a solar or wind station, a pumping mechanism (solar pump), a standardized water distribution network and telecommunications equipment.

IMPROVING AGRICULTURAL PRACTICE

With Abdou Maman's tele-irrigation system farmers can control their irrigation systems remotely from anywhere, at any time. Farmers control the flow of water from their phone and can also collect and share real-time and remote meteorological and hydrological data, including temperature, soil moisture content, rainfall, solar radiation and wind speed. The system integrates and synchronizes a solar or wind station, a pumping mechanism (solar pump), a standardized water distribution network and telecommunications equipment. The system promises to improve agricultural productivity and water management in Africa. It will also make farming a more attractive option for young people, help to increase mobile telephone penetration rates, generate more traffic for mobile operators, and relieve young girls of their water-carrying responsibilities, freeing up time for them to attend school.

"Most Sahel and Saharan countries have similar climatic and ecological characteristics and they experience the same difficulties in relation to water management. Our solution can be deployed easily in these areas. There is high demand for our system from countries like Burkina Faso, Cameroon, Côte d'Ivoire, Mali, Senegal and Togo," Mr. Maman explains.

WHY IP IS IMPORTANT

Mr. Maman developed his tele-irrigation concept in 2010 and his first prototype a year later. He was a winner of the Social Entrepreneur in Africa competition organized by France Telecom, and has received various other prestigious awards for his work. In

“Information technology is a powerful development catalyst for Africa because it can help the continent catch up in record time. Entrepreneurs should make good use of it and should also protect their innovations.”

Abdou Maman



Photo: Courtesy of Tech Innov

partnership with Orange Niger and two local banks, Mr. Maman began marketing his application in 2013. “Our system is patented and protected through the African Intellectual Property Organization (OAPI) under Patent No. 16025 BOPI No. 07BR / 2013. This protects my invention and means that I can generate some revenue from it. The patent is also supporting my efforts to commercialize the application on a large scale,” Mr. Maman says. “Information technology is a powerful development catalyst for Africa because it can help the continent to catch up in record time. Entrepreneurs should make good use of it and should also protect their innovations.”

“The intellectual property system plays a key role in that it encourages inventors to invest in the development of new technologies,” notes Anatole Krattiger of WIPO GREEN. “The IP system recognizes and rewards innovators for new products and services that are commercially successful. More specifically, technical information made freely available through the publication of patents offers many opportunities to inspire innovators to build on existing inventions and push technological boundaries. Importantly, the IP system also serves as one of the means to structure the transfer and diffusion of technologies.”

These two cases are just a tip of the iceberg, in terms of what is happening in Africa’s green tech scene. They do, however, offer some insight into the vision, determination and genius of African innovators, and their recognition of the importance of protecting their innovations, in developing new, more effective technologies to support efforts to adapt to and mitigate the worst effects of climate change.

Flying cars: transforming a dream into reality

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





Photo: Courtesy of AeroMobil

Aeromobil's concept vehicle operates both as a car and as an airplane. The company's aim is to create a viable new personal transport option.



Photo: Courtesy of AeroMobil



Photo: Courtesy of AeroMobil

AeroMobil's aim is to produce a two-seater vehicle with a range of up to 1,000 kilometers in 3 to 3.5 hours and that is capable of driving on-road "at the maximum allowable speed".

Ever been caught in a traffic jam and dreamed of being able to take to the skies? A flying car maybe? Surely that's just a flight of fancy, something that "M" might come up with for the next James Bond extravaganza. Not so! For the past 20 years, Stefan Klein, a Slovakian flying enthusiast with a flair for marrying design with innovation and a strong business sense, has been working to turn that dream into a reality. Someday not too far in the future, flying cars may well conquer the skies.

Like many great innovators, Stefan Klein began this venture in his garage, at home in Nitra, Slovakia. In the early days, with the help of his family he developed two prototypes – AeroMobil 1.0 and AeroMobil 2.0. But in 2010, things really took off when he joined forces with entrepreneur and angel investor Juraj Vaculík to form AeroMobil. Juraj Vaculík is now CEO of the company and "really believes that our vehicle has the potential to transform personal transport," AeroMobil's Chief Operating Officer, Ladislav Batik, told WIPO Magazine.

Since its formation, the company has produced two additional prototypes – AeroMobil 2.5 and AeroMobil 3.0. The current prototype, AeroMobil 3.0, took just ten months to develop. The ready availability of high-grade composite materials and other advanced technologies and the expertise of AeroMobil's engineers made such rapid progress possible, Mr. Batik explains.

So what exactly is a flying car? "We are building a vehicle that both operates as a car and as an airplane, with no compromises between these two modes of transport," explains Mr. Batik. "We don't simply want to make a good plane that can drive on the roads; we want to make a vehicle that operates perfectly both as a car and as a plane."

CHALLENGES

This is no mean feat given the competing technical needs of each mode of transport. "Combining these two modes of transport has been our biggest challenge, because by their nature, each one is fighting against the other. For example, the plane needs to be as light and as narrow as possible, it needs to be aerodynamic and to have lift, whereas the car needs to have downforce and to be heavy and wide so that it is stable on the road. But our prototype 3.0 proves that it is possible to combine both modes," Mr. Batik says.

Beyond the technical challenges, the engineers also have to find technical and design solutions to ensure compliance with current automobile and aerospace legislation. "Today, now that we have proven the concept and are starting to develop an experimental vehicle, we need to take the vehicle apart piece by piece to ensure that it meets all statutory requirements in terms of design, safety and so on. For example, to be effective the propeller



Photo: Courtesy of AeroMobil

Aeromobil is investing significant resources in overcoming both the technical and regulatory challenges associated with developing its dual-purpose vehicle and is keenly aware of the need to protect its innovations. Building up its portfolio of IP rights is important not only to prevent unauthorized copying of its innovations, but also to attract private investors.





Photo: Courtesy of AeroMobil

AeroMobil's flying car is the brainchild of Slovakian flying enthusiast, designer and innovator Stefan Klein (above, front right). AeroMobil's engineers (above) took just ten months to produce the AeroMobil 3.0 prototype.

needs to be as sharp as possible, but when the vehicle is operating in car mode, by law for safety reasons, sharp edges are not allowed. So we have to think about what to do with the propeller when the vehicle is stationary or on the road. Similarly, a car needs wing mirrors so a driver can reverse, but for a plane these create additional drag," explains Mr. Batik.

To overcome these challenges, AeroMobil's engineers have to think out of the box to come up with new solutions. "We want to build a better plane because we are building a car and we want to build a better car because we are building a plane," he notes, citing AeroMobil's Chief Technical Officer, Doug McAndrew. "This process involves introducing elements which were never thought useful for cars but which are available on planes, and vice versa".

WHY IP IS IMPORTANT

Given the huge effort to overcome both technical and regulatory challenges, AeroMobil is keenly aware of the need to protect its innovations. "From the beginning our strategy has been to protect what we have. During this innovation process we are coming up with many ideas which we need to protect because they are a potential future source of income and of course we don't want anybody stealing them," Mr. Batik comments.

"We filed our first patent (PCT SK/2012/000010) in 2012 in Slovakia and then in 101 countries through WIPO's Patent Cooperation Treaty (PCT). In some of these countries we have already been granted a patent, and in others the national phases are running now," he notes, explaining that when an international patent application filed under the PCT is examined for patentability by national patent

authorities, the outcomes can vary from country to country because of differences in national patent laws. "In some countries we need to defend our idea more than in others, and the costs related to that can be quite significant. That is why we have hired a well-respected patent law firm to help us to defend our applications in those countries and do all the necessary paperwork. We would not be able to do it on our own," he says.

AeroMobil has also registered its trademarks internationally through WIPO's Madrid System. Its IP portfolio currently comprises three patents (including PCT SK/2015/00003, and PCT SK/2015/00004) and eight trademarks plus a handful of utility models and design rights.

Building up the company's IP portfolio is also strategically important when it comes to attracting private investors. "Our current IP portfolio is basically the outcome of creating the AeroMobil 3.0 prototype. Now, as we improve on that and move towards AeroMobil 4.0, we are developing new ideas and have already started the process of filing IP applications for these. This is important because it shows investors that we are able to overcome regulatory hurdles and that we are coming up with patentable solutions, and that means they are going to get a return on their investment."

But AeroMobil is not the only one pursuing the dream of a flying car: there are around 20 other projects around the globe working on similar ventures, although not all comparable to AeroMobil. "We welcome this because if we were on our own it would be much more difficult to create this industry and to show that this is something which should be here," Mr. Batik explains. "But the fact that we are not alone in pursuing this technology is another reason why we need to protect our intellectual property."

ABOUT THE VEHICLE

The final specifications of the vehicle are as yet unknown. “What we have today is a concept vehicle, and its technical parameters are not necessarily those that will feature in the final product,” explains Mr. Batik. He does confirm, however, that the aim is to produce a two-seater vehicle with a range of up to 1,000 kilometers in 3 to 3.5 hours, and that it will be capable of driving at “the maximum allowable speed.” The vehicle will also come with all the safety features you would expect for a car and a plane. The latest prototype is already equipped with dual-axis autopilot and a safety parachute system “which safely lands the whole vehicle together with the pilot in case of any emergency,” says Mr. Batik.

Anyone toying with the idea of acquiring an AeroMobil will have to have a pilot’s license as well as a full driver’s license, but as it is a short take-off and landing (STOL) vehicle, access to a runway shouldn’t pose a problem. “We are testing a lot of engines to shorten the take-off distance to a few hundred meters. We are strong supporters of using the wings as a source of lift as opposed to any other technology, but are still open to any new technologies.” notes Mr. Batik.

“If you have an idea that you think is innovative and commercially viable, you definitely need to protect it and get advice on how to do so.”

Ladislav Batik

POTENTIAL USES

The company foresees three main uses for its vehicle.

First, for short and middle distance travel from 50 to 600 kilometers.

Second, for travel to areas with limited infrastructure. “With AeroMobil, you can remove a variety of obstacles,” Mr. Batik explains, noting that behind the wheel of an AeroMobil, it would no longer be necessary to drive around a Norwegian fjord or the St. Francisco Bay area; one could fly directly over it. He also foresees uses in remote areas with no or limited road infrastructure, such as in Africa, Australia and some parts of the USA, where the vehicle flies over vast expanses but does the last mile as a car.

The third main use would be for commuters who spend up to two-and-a-half hours traveling intercity due to heavy congestion. “Of course the last mile you probably need to do as a car, but in between those cities, you can fly and significantly shorten your travel time,” Mr. Batik explains.

“What is really good about our vehicle is its versatility. You can land when the weather is no longer suitable for flight, transfer to car mode and continue by road, whereas with a small aircraft you need to land and wait until the weather clears before you can carry on.”

GETTING THE VEHICLE TO MARKET

Compliance with current automobile and aerospace legislation is a priority for AeroMobil as this will speed up the time it takes to get the product to market. “We have decided that the first vehicle we put on the market will fulfill existing regulations. Waiting for new legislation would take years.”

The company plans to begin taking orders in 2017 with delivery of the first vehicles a year later. It is targeting collectors of small airplanes, sports cars and yachts. “We are creating a new industry, a new environment, so at first we will only produce a limited number of vehicles. Our first goal is to get the vehicle onto the market, create ambassadors for the product and demonstrate that it can coexist with the current means of transport and is a viable personal transport option. Once it has been introduced to the general public and demand increases, then we can think about large-scale production and offer it as a mobility-as-a-service solution.”

So the next time you are caught in a traffic jam, take heart, because new personal transport options like AeroMobil promise to soon make congestion a thing of the past.



The latest version of WIPO Translate employs neural machine translation (NMT) technology to offer innovators the highest-quality service yet available for accessing information about new technologies.

Making sense of patent information

By **Catherine Jewell, Edward Harris and Steven Kelly**,
Communications Division, WIPO

The patent system is designed both to recognize and reward inventors and to make technological information available to the general public with a view to spurring new innovations. Patent documents contain a huge amount of technological information and are a valuable source of business intelligence.

WIPO has developed a variety of new services and tools to enable innovators and companies to mine this information in support of their own research or business goals. In autumn 2016, it launched two new tools that will make it even easier to search and make sense of the huge volume of patent information generated every year in diverse languages across the globe.

LEADING THE WAY IN MACHINE TRANSLATION

WIPO Translate is a ground-breaking translation tool for patent documents based on artificial intelligence which promises to unlock a wealth of previously inaccessible technological information.

Unveiled in late October 2016, the latest version of WIPO Translate employs neural machine translation (NMT) technology to offer innovators the highest-quality service yet available for accessing information about new technologies.

“One of the aims of the patent system is to make technology available,” explains WIPO Director General Francis Gurry. “Language is often a barrier to achieving that aim universally.”

Mr. Gurry heralded the development of WIPO Translate as “another great step forward” which means that “a vast and ever-increasing trove of patent documents will soon be more easily accessible to innovators who search these records for inspiration or technical know-how.”

WIPO Translate outperforms existing machine translation tools. It incorporates cutting-edge neural machine translation technology that enables it to convert highly technical patent documents into a second language in a style and syntax that closely mirrors common usage.

Neural machine translation is an emerging technology inspired by the structure and function of brain’s biological neural networks – a radical departure from the phrase-based statistical translation around which most established tools have been developed. With this technology, a large neural network “learns” from previously translated sentences, enabling it to generate highly accurate translations. In the case of WIPO Translate, some 60 million sentences from Chinese patent documents provided by the State Intellectual Property Office of the People’s Republic of China through WIPO’s PATENTSCOPE database were compared with their equivalent official English translation as filed at the United States Patent and Trademark Office.

EMPHASIS ON EAST ASIAN LANGUAGES

The neural version of WIPO Translate complements WIPO’s existing statistical machine-based translation tools, which are available for 16 language pairs. It is currently available in beta mode for translations from Chinese to English, with English to Chinese translation capability to be rolled out shortly. This language pairing was prioritized because of the increasingly high level of patenting activity in China, which in 2015 accounted for around 15 percent of global patenting activity. “As part of a global trend, patent applications are increasingly being filed in East Asian languages, particularly Chinese, and WIPO Translate helps ensure that state-of-the-art knowledge created in these languages is shared as widely and rapidly as possible,” explains Mr. Gurry.

WIPO plans to extend WIPO Translate NMT to patent applications in Japanese, Korean and French, with other languages to follow soon.

HOW TO USE WIPO TRANSLATE

WIPO Translate is free of charge and available through WIPO's PATENTSCOPE database. To translate a text, simply copy and paste the text you want to translate into the "Text to be translated" box, select the language you require and press the "Translate" button or click the "WIPO Translate" button within PATENTSCOPE search results. In either case, the required text is translated instantly.

PATENT SEARCHES FOR CHEMISTRY AND PHARMACOLOGY MADE EASY

Another new development allows users to mine chemical or pharmacological data from the patent documents contained in PATENTSCOPE.

PATENTSCOPE's new chemical structure search functionality makes patent searches in the fields of chemistry and pharmacology much easier. Again, it is completely free of charge. It increases the searchability of patent documents, enabling users to search by the name of chemical compounds or by their structure as outlined in drawings embedded in patent applications or patents.

Chemical substances are described in a variety of different ways in patent documents (see Table 1), making it notoriously difficult to undertake patent searches in the fields of chemistry or pharmacology. They may be described using a variety of different naming conventions, or simply by a drawing outlining their chemical structure. Those relating to a pharmaceutical substance may have one or more officially accepted or commonly used names. Undertaking a thorough search of chemical information in patent documents usually involves using a variety of search parameters and sources – each with its own limitations – depending on the purpose of a patent search and the type of information sought.

MAIN BENEFICIARIES

PATENTSCOPE's new chemical structure search function will benefit patent examiners and IP professionals, especially those operating in countries with less developed IP services. It will help improve the quality of patent searches of prior art to determine patentability and will strengthen the validity of the patents that are granted. The new search facility will also help IP offices in developing

countries handle queries about the patent status of particular medicines, reducing their need to spend limited resources on commercial databases.

Health professionals and procurement agencies that rely on using publicly available patent databases to carry out patent searches, for example to ascertain the IP status of certain commercially available drugs in a given country, also stand to benefit. The increased transparency of the patent system that this new tool enables will also benefit researchers and manufacturers of generic versions of pharmaceuticals wishing to follow new developments and trends in the fields of chemistry and pharmacology.

HOW TO USE PATENTSCOPE'S CHEMICAL STRUCTURE SEARCH

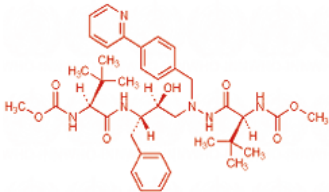
No specialized knowledge is required to use this new tool. Simply log into your PATENTSCOPE account (which can be created free of charge) and follow the user guide for chemical search available in the "Help" menus under "How to search".

To search for chemical compounds embedded in patent documents, you have three options:

1. The "Upload structure" option allows you to upload a file containing a chemical description in a supported format (e.g. MOL, SMILES, or bitmap representations of a chemical compound such as a .png, .gif, .tiff or .jpeg).
2. The "Convert a structure" option allows you to select your preferred type of search parameter. You can search by the various names of the compound, including its commercial name, the name it goes by in the Chemical Abstracts Service (CAS) Registry, its informal name, its international non-proprietary name (INN), its International Chemical Textual identifier (InChI) identifier, or its simplified-molecular-input-line-entry-system (SMILES) identifier.
3. The "Structure editor" option allows you to draw or edit a chemical structure, reaction or fragment. These can be sketched out in the same way as they usually are on paper.

The search is then run against the title, abstract, claim and description fields of patent documents in PATENTSCOPE, and only works against developed formulas. The search tool is currently available for international patent applications filed under the PCT in English and German from 1978, and for the national collection of the United States from 1979. It will be available for other languages and collections soon.

Table 1: Examples of search parameters for pharmaceutical substances

Search parameter	Example	Explanation
Manufacturer name	BMS-232632	During the R&D stage, a substance is identified in the laboratory or publications by a code (a combination of letters and numbers).
INN (generic name)	atazanavir	Each pharmaceutical substance is identified by a unique and universally available designated name.
Brand name	Reyataz®	Once a drug receives marketing approval, it is sold with a proprietary name registered for trademark protection.
IUPAC chemical name	methyl N-[(1S)-1-[(2S,3S)-3-hydroxy-4-[(2S)-2-[(methoxycarbonyl)amino]-3,3-dimethyl-N'-[4-(pyridin-2-yl)phenyl]methyl]butanehydrazido]-1-phenylbutan-2-yl]carbamoyl]-2,2-dimethylpropyl]carbamate	The International Union of Pure and Applied Chemistry (IUPAC) sets standards for the naming of the chemical elements and compounds in a structured manner.
CAS Registry Number	198904-31-3	Upon publication of chemical literatures and patents, the Chemical Abstracts Service (CAS) assigns a unique numeric identifier to a newly published compound. ¹
International Patent Classification (IPC) code	A61P 31/18	Although IPC codes do not pinpoint a particular substance, a code can be used with other search parameters to narrow down a search result.
Molecular formula	C38H52N6O7	This chemical formula shows the number and kinds of atoms in a molecule.
Chemical structure (graphic formula)		Several commercial services offer patent search databases that allow searching compounds by chemical structure in addition to keywords (names) and classification codes. They use various indexing rules so that searchers can also search chemical compounds described in a Markush structure.

¹ While there are other organizations that assign identifiers to chemical compounds, the CAS Registry Number is one of the most widely used codes by experts in the field of chemistry.

Meet Alex – IP Australia’s next-generation virtual assistant

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



Photo: Courtesy of IP Australia

“Alex is our 24/7 virtual assistant that through machine learning technologies, digital services and natural language can provide ‘human-like’ responses to customers’ questions and support them in better navigating the intellectual property system,” says Patricia Kelly, Director General of IP Australia (above).

In today’s digital world, IP Australia’s customers are seeking a more personalized, assisted customer experience with smart online tools available at any time. The digital economy has provided enormous opportunities for organizations to provide new innovative offerings that delight customers, reduce costs and deliver significant benefits. So we asked ourselves, how could IP Australia embrace these opportunities to support customer expectations? The answer: provide customers with a digital virtual assistant, available 24/7, all year round.

IP Australia has worked hard with its customers to embrace an accelerated digital service delivery journey. Since 2012, we have successfully transformed our business model. At that time, just 12 per cent of customers undertook transactions online. Now, in 2016, approximately 99 per cent of the more than 800,000 customer transactions we manage each year are done digitally.

It is from this incredibly powerful digital platform that we planned to add value to our customers’ experience and business outcomes by introducing our new intelligent virtual assistant – Alex.



Photo: Courtesy of IP Australia

On her first day of operation, Alex had 178 conversations. Seventy-three percent of users said that Alex had answered their question effectively. At present, Alex is able to answer and manage 81 percent of customer interactions with success, which is an industry standard for virtual assistant technology.

WHO IS ALEX?

Alex is our 24/7 virtual assistant that through machine learning technologies, digital services and natural language processing can provide “human-like” responses to customers’ questions and support them in better navigating the intellectual property (IP) system. The virtual assistant technology allows us to offer support within our preferred online web channel with a simple, clear and timely service. We are using a next-generation digital asset to transform customer experience at IP Australia. It is also being deployed across a range of leading global private and public sector service delivery organizations.

IP Australia’s deployment of Alex is designed to add value for both customers and the organization. Alex was officially launched in July 2016, initially supporting IP Australia’s trademark services, which account for 76 percent of all contact center enquiries. We believed that given the high volume of enquiries and the generally limited knowledge that applicants have of the trademark application process, a virtual assistant in this area would be most helpful in assisting them to navigate Australia’s IP system. In September 2016, Alex was expanded and now also covers patents, plant breeder’s rights and designs. Over the coming months Alex will learn and expand “her” knowledge as customers continue to ask her more and more questions.

DOES ALEX MAKE OUR CUSTOMERS HAPPY?

On her first day of operation, Alex had 178 conversations. Seventy-three percent of users told us that Alex had answered their question effectively. That’s pretty impressive for a first day on the job. At present, Alex is able to answer and manage 81 percent of customer interactions with success. This is an industry standard for virtual assistant technology. As Alex expands and learns, she will further improve and add value for our customers.

Customer sentiment has been extremely positive and is reflected in strong engagement with Alex. Although it is still early days, since the introduction of Alex, IP Australia has already experienced an almost 10 percent reduction in calls compared to the same period last year. This tells us that our customers are embracing this new technology with enthusiasm, and is encouraging us to undertake further customer research to optimize Alex and explore new features to build on her success.

WHAT’S NEXT FOR ALEX?

Alex’s future is bright as we continue to build her capability to improve support for our customers. IP Australia is now assessing the deployment of Alex within our authenticated digital e-services platform which will enable customers to transact and access tailored information about their IP rights securely. This will support a more personalized transactional service for our customers. Our ultimate vision is to work collaboratively across a range of government agencies to explore the possibilities of supporting businesses and innovators in a seamless, citizen-centric digital experience.

For further information regarding Alex, contact Rob Bollard, General Manager, Business Futures, IP Australia: robert.bollard@ipaustrialia.gov.au.

European Court of Justice: hyperlinks to unauthorized content may infringe copyright*

By **Tobias Cohen Jehoram**, Partner, De Brauw, Blackstone, Westbroek, Amsterdam, Netherlands

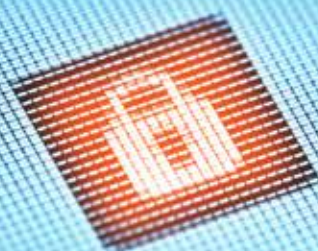
Hyperlinking has become more risky. In its long-awaited judgment in *Sanoma/GS Media*, delivered on September 8, 2016, the European Court of Justice (ECJ) clarified that the posting of a hyperlink to unauthorized content protected by copyright and hosted by a third party may result in copyright infringement. This will be the case if the person posting the link knows or should have known that the hyperlink directed visitors to illegally published works. The ECJ also held that if hyperlinks are posted in the context of pursuing financial gain, full knowledge about the possible illegal character of the works is to be presumed. This means that commercial parties in particular will now have to thoroughly investigate and monitor what type of content they link to on their websites and in other forms of online communication.

THE CASE

The case concerned a complaint by Sanoma, the publisher of the Dutch edition of *Playboy*, about a posting by Geen Stijl (GS) regarding as-yet-unpublished pictures of Dutch reality star Britt Dekker. In its post, GS provided a hyperlink to an Australian website where some of the copyright-protected *Playboy* pictures could be downloaded. Sanoma argued that the mere posting of this hyperlink constituted a “communication to the public” protected by its copyright, and that GS’s publication of the hyperlink could therefore be prohibited. GS argued that hyperlinking did not fall within the author’s exclusive right, because the ECJ did not consider linking to legal content an infringement since there was no communication to a “new public” (*Svensson and Bestwater*). In 2015, the Dutch Supreme Court decided to refer preliminary questions to the ECJ.

The ECJ’s answers in *Sanoma Media Netherlands BV et al v GS Media* show that a hyperlink’s legal status is ambiguous. Under European copyright law, hyperlinking to illegal content does not in principle qualify as a “communication to the public”. However, when the person posting the hyperlink has or should have had knowledge of the illegal character of the content hosted by a third party, hyperlinking will fall within the scope of the author’s exclusive right and can therefore be prohibited. The permissibility of a hyperlink thus has to be decided on the basis of an individual assessment. In that context, the ECJ held that it will be particularly relevant whether or not a hyperlink is posted by a commercial party pursuing financial gain. As the Court felt that commercial parties can be expected to carry out the necessary checks before posting a hyperlink, they are presumed to be fully aware of the legality of the third-party content they link to.

* This article was first published at: www.debrauw.com/newsletter/ecj-hyperlinks-unauthorised-content-may-infringe-copyright



Hyperlinking has become more risky. The ECJ's judgment in *Sanoma/GS Media*, delivered on September 8, 2016, clarified that the posting of a hyperlink to unauthorized content protected by copyright and hosted by a third party may result in copyright infringement.

CONSEQUENCES OF THE JUDGMENT

Although this presumption can be rebutted, the *Sanoma/GS Media* judgment is likely to have serious consequences for commercial website operators in general, and news media in particular. The presumed knowledge about the legality of content will apply not only in cases where a hyperlink posting is directly connected to the aim of pursuing financial gain, but also seems to apply to websites seeking financial gain in the broadest sense of the word. With the exception of state-owned media, practically all owners of commercial websites will therefore run a higher risk of liability when posting a hyperlink. In anticipation of the outcome of the ongoing judicial process, commercial parties are therefore advised to carefully reassess their take-down and screening

processes. Apart from that, commercial parties should carefully reconsider the benefits of hyperlinking to third-party content for their business in general. They should check the legality of new links that they post. And wherever possible, it is advisable to regularly check the legality of third-party content after the hyperlink has been posted, because content hosted by third parties may later be changed without notification.

This decision also seems to mark a new approach to the definition of "communicating to the public" whereby it becomes dependent on subjective circumstances such as the commercial intent of the user and their actual or presumed knowledge of the nature of the source of the material. This may lead to legal uncertainty in other situations too.

Chess, films and timepieces: a filmmaker's IP journey

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

At 25, Norway's Magnus Carlsen is already a chess legend. In 2004, he became the world's youngest chess Grandmaster at the tender age of 13 years and 148 days. He is the current chess champion of the world.

In the early 2000s, Øyvind Von Doren Asbjørnsen, a Norwegian film director and avid chess fan, saw Magnus Carlsen in action and, recognizing his genius, set about making *The Prince of Chess*. This documentary takes viewers on a fascinating journey into the young player's life and explores the workings of his brilliant mind. Øyvind's latest production, *Magnus*, a feature-length film, premiered at the Tribeca Film Festival in New York in April 2016 and is now in cinemas across Europe.

In a recent interview with *WIPO Magazine* on the sidelines of a WIPO Roving Seminar in Oslo, Norway, in October 2016, Øyvind explains how he came to make the film and why copyright is so important to filmmakers. He also shares his views on the importance of intellectual property (IP) in general as he embarks on a new venture that combines his passion for filmmaking with his love of watches.

How did you get into film?

I have always had a passion for film. I graduated from the London Film School in 1987, so it was great to be back there recently for the screening of my latest work, *Magnus*, which has now been sold in 60 countries.

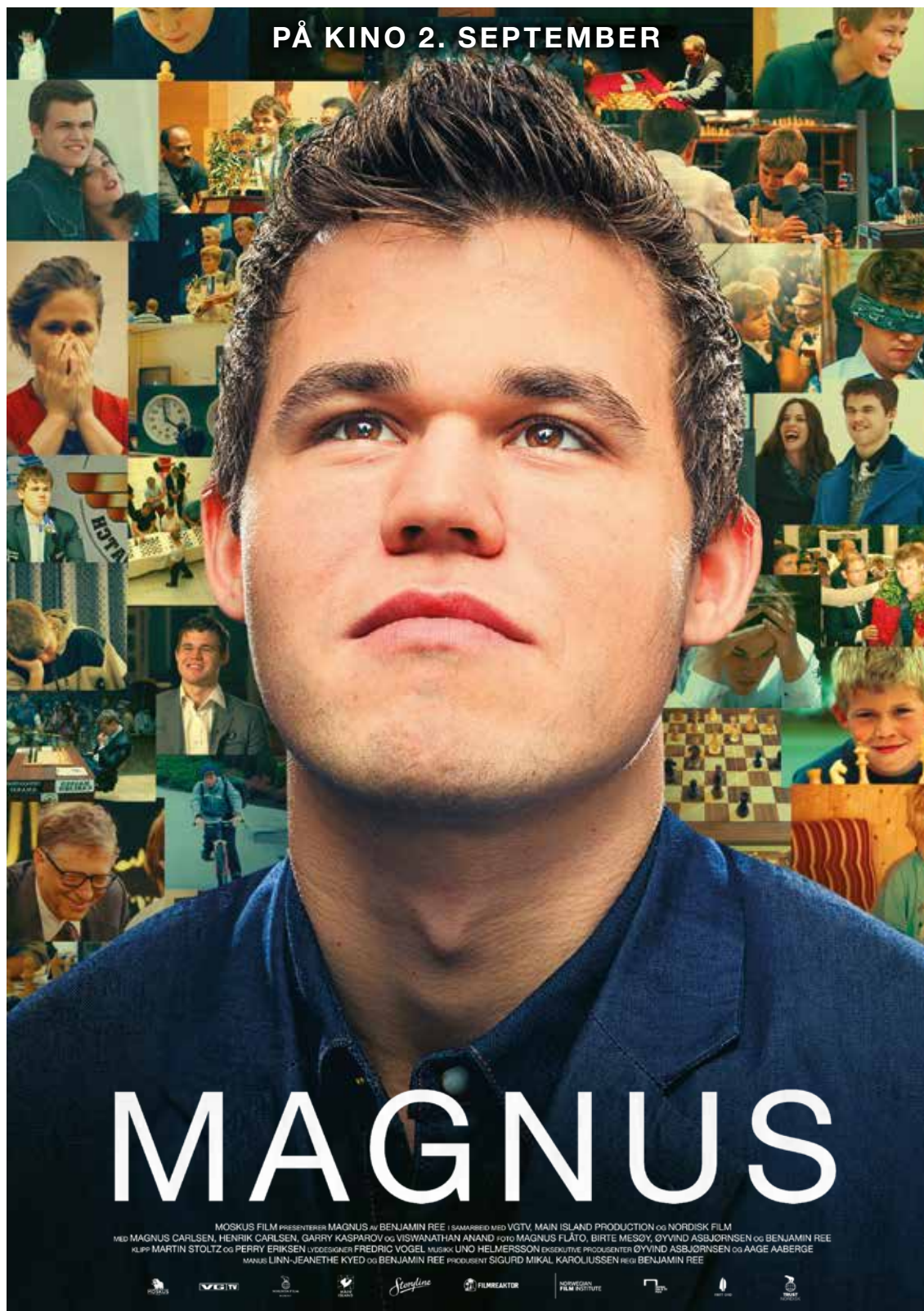
What inspired you to make a documentary and a film about chess?

I play chess every day, although not at world-class level, and in 2003 I heard rumors here in Oslo about a young boy who was doing incredible things. So I went to see him play. He was unbelievable. I knew his trainer, and asked him to introduce me to the boy and Magnus's parents. After some discussion we agreed to make a documentary film about Magnus. We started shooting the *Prince of Chess*, a 50-minute documentary, in 2004. It premiered in 2005 and was distributed internationally on broadcast TV. Then, in early 2013, I began collaborating with a young filmmaker, Benjamin Ree, to produce the feature-length movie *Magnus*, which is now in cinemas across Europe.



Photo by Jan-Erik Eriksen

In the early 2000s, Øyvind Von Doren Asbjørnsen (above), a Norwegian film director saw Magnus Carlsen, the current World Chess Champion, in action. Recognizing his genius, he filmed a documentary, *The Prince of Chess*, which has been made into the feature-length film, *Magnus*, which is currently in cinemas across Europe.



The film *Magnus* portrays decisive moments in the life of Norway's Magnus Carlsen, who at 25, is already a chess legend.



Why did you choose to make a documentary?

I have made both films based on fiction and documentaries. But as Benjamin Ree says, there has never been a better time in the history of the world to make documentaries because there is so much archive material available. I agree with him. People are constantly filming on mobile phones and digital cameras so there is an incredible amount of archive footage available on almost any subject. Sometimes it does require a lot of digging and it can be a challenge to transfer old footage onto modern, digital formats, but the results speak for themselves. By combining archive footage with new material you can tell a more compelling story. That is one of the great things about *Magnus*. It is filmed over a decade and portrays decisive moments in this incredible young genius's life. We tell his story in the present tense. Instead of people sitting and talking about how it was, we *show* how it was. It gives the story more immediacy and the audience a sense that they are following him through his life, and that's incredible.

Why are IP rights important for filmmakers?

Copyright protection enables the artists that create a film or a piece of music to get their fair share of the revenue that their works make in the marketplace, and this income enables us to make new works. That is why copyright protection is so important. Without it creators simply won't be able to continue creating. Artists need to be paid fairly.

What needs to be done to tackle piracy?

Piracy is like a hydra. You cut off one head and many more appear. The best way to tackle it is to come up with user-friendly, simple solutions that allow people to enjoy films, music or other creative works easily, legally and at a fair price. It needs to be more difficult to be a pirate than it is to watch content legally. In this respect, Netflix and other platforms such as Vimeo have been a positive step forward. They are not perfect, but they are a step in the right direction and much better than all the money going to pirates.

What message do you have for film pirates?

Stop stealing! Although a film, or a piece of music for that matter, is not a tangible thing – you can't touch it, it's a digital file – downloading an illegal copy of a film is the same as going into a shop and stealing something. It is theft and people have to understand that. It was very frustrating for me when I discovered that my documentary *The Prince of Chess*, which I had made available through video-on-demand services at a fair

price, was downloaded illegally so many times. Before I got it removed from YouTube, it had been viewed 1.7 million times. If I had been able to get a fair share of that, it would have helped me create more films.

Do you think there is a future for cinema?

Yes, I think cinema is still the best way to see a film. When the lights go down and the story unfolds on the silver screen, it's fascinating and intriguing. Of course, many prefer to see a film in the comfort of their own home. Apple's iTunes is now very popular and generates some revenue for filmmakers. There is room for both.

How did you fund Magnus?

The film cost around EUR 1 million to make. We wouldn't have been able to do it without the financial support of the Norwegian Film Fund and the Norwegian Film Institute. That enabled us to attract private investors. It was not easy but we managed and now they will get a nice return on their investment.

What next?

My next project involves making a promotional film about a new line of watches that I am designing and developing. Ever since I received my great grandfather's watch at the age of 12, I have been fascinated by watches and I'm an avid watch collector. I am fascinated by the precision, complexity and sheer beauty of fine watches, so now my experience as a filmmaker is going to help me pursue my lifelong dream to set up a watch-making business. After travelling to watch fairs in Switzerland and Hong Kong and finding suppliers, I started designing watches. The first ones were launched on Kickstarter in early December. Crowd-funding can be a great way to get a business off the ground and some companies have been very successful in raising funds for similar products. This new venture gives me a chance to marry my film background with my passion for watches. These days if you want to launch a product on a platform like Kickstarter, you really need a film. A well-crafted clip with a compelling back story will, we hope, give the watches greater appeal and a certain meta quality.

Can you tell us about your logo?

Our logo is inspired by the Viking rune sign "jera", meaning year. It is the rune of success and continuity. It symbolizes the cycle of the seasons and implies movement and change, and was a good luck charm for the Vikings. We thought it would make a fitting symbol for our time-piece. The watch's clean lines and art nouveau-styled dial, which give it an elegant vintage flair, are inspired by the

In November 2016,
Magnus Carlsen won the World Chess
Championship for the third time.

Photo: Moskus Film/TrustNordisk

architecture and natural beauty of Aalesund on the West Coast of Norway, where I grew up. We have a great brand, a great story, a good design and a watch with a quality Swiss movement. Our aim is for it to be seen as a true heirloom that people will be proud to own. So once the business gets established, we plan to distribute limited editions to high-end retail outlets because what we cannot get hold of easily is always more desirable.

And what role does IP play your watch business?

IP is very important. Of course, as a filmmaker I am familiar with copyright, but trademark and design protection are all quite new to me. When I set out on this venture, one of the very first pieces of advice I received was from an elderly Swiss watchmaker who insisted I should register my trademark. Although many others said I shouldn't worry about it, I followed his valuable advice and have now registered it in Norway and 31 other countries using WIPO's Madrid System for the International Registration of Marks. A business really does need to protect its brand, especially in the luxury goods sector, where counterfeiting is rife. Registering your trademark is an important part of building brand value and a reputation for authenticity. It may also make people think twice before copying it.



About WIPO's Roving Seminars

WIPO's Roving Seminars Program offers local entrepreneurs, inventors and researchers a unique opportunity to learn about WIPO's activities, in particular the systems and services that it offers to facilitate the protection of IP assets in global markets.

Since 2013, seminars have been held in over 60 cities, from Auckland to Thessalonica, and from Atlanta to Toulouse. Eighteen cities were covered in 2016 and over 20 are planned for 2017 in response to increasing demand.

The seminars are organized in cooperation with national IP offices and are tailored to the specific needs and interests of target audiences.

More information is available at: www.wipo.int/dcea/en/roving_seminars.

What challenges have you faced in setting up your business?

There have been many, like meeting the right component producers and suppliers, traveling to many countries to inspect the quality of the materials and paying attention to a myriad of small details. It has been hard but great fun, and I get to do my hobby full-time every day. And I love the design work.

The good news is that the public is still very much in love with the watch. Although we live in a digital age, people still want a fine analog timepiece with a quality mechanism. Watches are a fashion statement and with this brand, I have an opportunity to build a whole collection of fine timepieces for men and women. Of course, it is not easy, but it is perhaps easier than ever before to build a brand in today's increasingly interconnected digital world.

What has been your experience in registering your mark?

It was very straightforward. I first registered the trademark with the Norwegian Industrial Property Office and now I am in the process of filing an application to register it internationally through WIPO's Madrid System. The basic fee for registering a trademark internationally covers three classes of goods – anything beyond that involves additional fees – so I decided to register the trademark for watches (class 14), sunglasses (class 9) and handbags (class 18). The Madrid System is simple to use and fairly priced and that's very important for an aspiring entrepreneur like me. When I learned about it I was delighted and relieved to learn that we didn't have to do all the legwork involved in registering our trademark in each of our target markets but could simply file an international trademark registration through the Madrid System. The System also gives us the flexibility to expand protection of our trademark as we build the brand and enter new markets. Being able to participate in events like the WIPO Roving Seminar has been very useful. I have learned about the various services that WIPO offers businesses, some of which are free of charge. For example, I can't wait to take a closer look at PATENTSCOPE and the Global Brands Database.

Now that you have taken the leap, what advice do you have for aspiring filmmakers and entrepreneurs?

Follow your dream and your passion! If your passion is really deep and true and the fascination is there, go for it. And be curious. Never be afraid to ask dumb questions.



Credit : Photo by Fuglefeilet

Øyvind Von Doren Asbjørnsen is now using his filmmaking talents to launch his new line of watches, the design of which is inspired by the architecture and natural beauty of Aalesund on the West Coast of Norway where he grew up.



VON DOREN
FINE TIMEPIECES

The logo for the Von Doren line of watches is inspired by the Viking rune sign “jera”, meaning year, the rune of success and continuity. It symbolizes the cycle of the seasons and implies movement and change, and was a good luck charm for the Vikings. The trademark is now registered in Norway and 31 other countries using WIPO’s Madrid System for the International Registration of Marks.



Courtesy of Von Doren®

University IP policies: perception and practice

By **Ruth Soetendorp, Mandy Haberman and Steve Smith,**

Intellectual Property Awareness Network Education Group, United Kingdom

Students are destined to be key workers in the knowledge economy. They will be dealing with intellectual property (IP) during their studies and future careers. So how well do they understand it? Recent research from the United Kingdom suggests there is much room for improvement.

In July 2016, the Intellectual Property Awareness Network (IPAN) published research which sought to achieve a better understanding of how IP policies in Higher Education Institutions (HEIs) are perceived and practised on UK campuses. Almost 3,000 students and 250 academics responded to the online questionnaires devised by NUS Insight, the professional research arm of the UK National Union of Students (NUS), in conjunction with IPAN.

In a foreword to the report, Nigel Carrington, Vice-Chancellor of the UK University of the Arts in London, wrote: “IPAN’s powerful survey has identified and described the lack of understanding of IP so effectively. The gap in staff and student understanding of IP may represent a failure in knowledge transfer so far, but at least we can teach our way out of it.” Considering how IP might be taught, he went on to say that “IP is as much about recognising opportunities and the nature of university business as it is about managing threats. There is a need to emphasise the positive, and encourage students to think of IP rights as something of value which they themselves produce, own and exploit.”

CHANGING ATTITUDES TO IP

In 1999, *The New York Times* described IP as having “transformed from a sleepy area of law and business to one of the driving engines of a high-technology economy.” Business commitment to IP issues has grown since then, and it might have been reasonable to expect a similar mushrooming of initiatives to bring IP awareness and competence to graduates seeking careers in the knowledge economy. Sadly this has not been the case.

Globally, regionally and nationally, attempts are being made to help future generations understand the central role that IP plays in the economy and society and to equip them to benefit from it. In the UK, the Intellectual Property Office (IPO) has developed IP Tutor for self-managed student learning, and the Government’s university Quality Assurance Agency is beginning to include intellectual property awareness as a benchmark for assessing different programs.

But for “IP enthusiasts” (to borrow the epithet of IPKat founder Jeremy Phillips) that isn’t enough. Today, more universities may offer their non-law students an opportunity to become acquainted with IP, but still the majority of HEIs are content for their students to graduate without an awareness of what IP is or the impact it will have on their future careers.



Recent research from the UK shows that IP remains largely absent from students' learning journey despite the fact that students are increasingly encouraged to complement their core studies with enterprise and entrepreneurship, which require an understanding of how to protect their intellectual outputs.



Growing evidence suggests that, given the choice, students will opt to follow an IP module. The UK's National Union of Students is working with the UK IPO and IPAN to find ways to improve student access to IP-related information.

The concern this causes is evident in the reports of governments and international organizations, but has not been sufficient to trigger a universal upswing in courses offering IP education across faculties and campuses.

A LACK OF IP AWARENESS AMONG STUDENTS

Amid all the research surrounding IP education, the voice of one particular stakeholder has been striking in its absence: that of the student.

Recognizing this omission, in 2012, with the support of the UK IPO, IPAN began working with the NUS in the UK to investigate student attitudes to IP. A questionnaire devised by IPAN and the NUS was distributed through the NUS student database and generated some 2,200 responses. These showed that “students believe a knowledge of IP is important” and that “those who have some experience of IP education view it positively, and express a desire for more.” Responses also confirmed that the extent of IP teaching is very limited, generally focuses exclusively on plagiarism, and

“I don’t know
a lot about
IP, but I feel
I should.”

Frequent survey response

is not part of assessed work. The questionnaire further indicated that students are not aware of the potential scope of IP education, and that HEIs make little use of external IP experts.

Building on these findings, in 2014 IPAN commissioned the NUS professional research unit to survey campus-level perception and the practice of IP policies at British HEIs. Their work was funded by IPAN, which includes 40 commercial, academic and professional organizations with an interest in expanding IP awareness, together with individual IPAN members and CREATE (*RCUK Centre for Copyright and New Business Models in the Creative Economy*).

This latest research shows that students and staff are confused at best, and at worst ignorant, about the IP policies of their institutions. The survey indicates that even where such policies exist, they have little or no impact on the perception and practice of IP on campus. The survey further revealed a low level of understanding of the term “intellectual property”, illustrated by a common student free-text response: “it was only while completing this questionnaire that I realised how important IP is and will be to my future career.”

CHANGING LABOR MARKET UNDERLINES NEED FOR IP EDUCATION

Students are increasingly encouraged to consider enterprise and entrepreneurship as complementary to the core discipline of their studies. They recognize that the employment options open to them involve making ideas pay, working with startups and freelancing. Each of these areas of work will require them to have an understanding of how to protect their intellectual outputs, and yet IP remains absent from their learning journey.

At the launch of the research report, Sir Rod Aldridge OBE, FRSA, a successful businessman responsible for establishing entrepreneurial Technical Colleges and Academies, said: “There is clearly a need to develop an awareness of [IP] issues in both the student and the teacher,” noting that “the objective is to improve the employability of students, where students are encouraged to be independent creative thinkers and innovators, developing the mind-set, skillsets and characteristics needed to be a pioneer. These students will create numerous situations where I can now see there are IP circumstances.”

STUDENTS WANT IP EDUCATION

There is mounting evidence that when students get the choice, they will opt to follow an IP module. It is up to HEIs to make these available to them.

Responding to the report, renowned designer Sebastian Conran said: “The reality is that surprisingly few of us in the creative industries really understand how IP works, let alone the value of content. IP policies understandably treat staff and students differently. From Plymouth to Inverness almost every university has its own IP policy yet there is no consistency as to how students are treated.”



Photo: iStock.com/monkeybusinessimages

Research by IPAN in collaboration with the UK's NUS was designed to generate insights into how students who are required to submit original work for assessment handle IP issues.

“Who owns what? How much is it worth? How do I protect it from theft? What are my rights? These are all issues that have been explored in the IPAN survey, and it is surprising how little those that are now paying for their education and those that teach them accurately know about this very significant issue that will have consequences for the future of the UK and its brightest minds.”

Sebastian Conran's comments resonate strongly with the research findings. Survey questions were designed to generate insights into how students who are required to submit original creative and innovative work for assessment handle IP issues. Sixty-eight percent of respondents said they looked to their HEI for advice, underlining how important it is for HEI staff to have an understanding of IP rights and knowledge of their institution's IP policy. Responses from staff clearly show that faculty members recognize the importance of teaching their students about IP and its relevance to their future careers.

A WELCOME FROM THE NATIONAL UNION OF STUDENTS

The UK NUS welcomed the research and its findings, stating that knowledge of IP rights “is becoming increasingly important for students to protect themselves and support their future careers.” It expressed concern about the “worrying number of both students and staff” that “are either confused about IP or have little to no knowledge of their rights.”

Noting that more than one in ten students turn to their students' union for advice on IP matters, the NUS recognized that it had an important role to play and said that was currently working with IPAN and the UK IPO to find ways to improve student access to IP-related information.

IPAN is delighted to have been the catalyst for the collaboration between the NUS and the UK IPO, which promises to lead to increased opportunities for students to have access to the IP information they need for their future careers when pursuing their studies. This fruitful collaboration may also serve to inspire similar partnerships between national IP offices and students' unions in other countries, and help foster the development of university policies that respond to the voice of students and their thirst for knowledge about how to protect their own ideas and avoid breaking rules they are unaware of.



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