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Editor: **Catherine Jewell**
Graphic Designer: **Annick Demierre**
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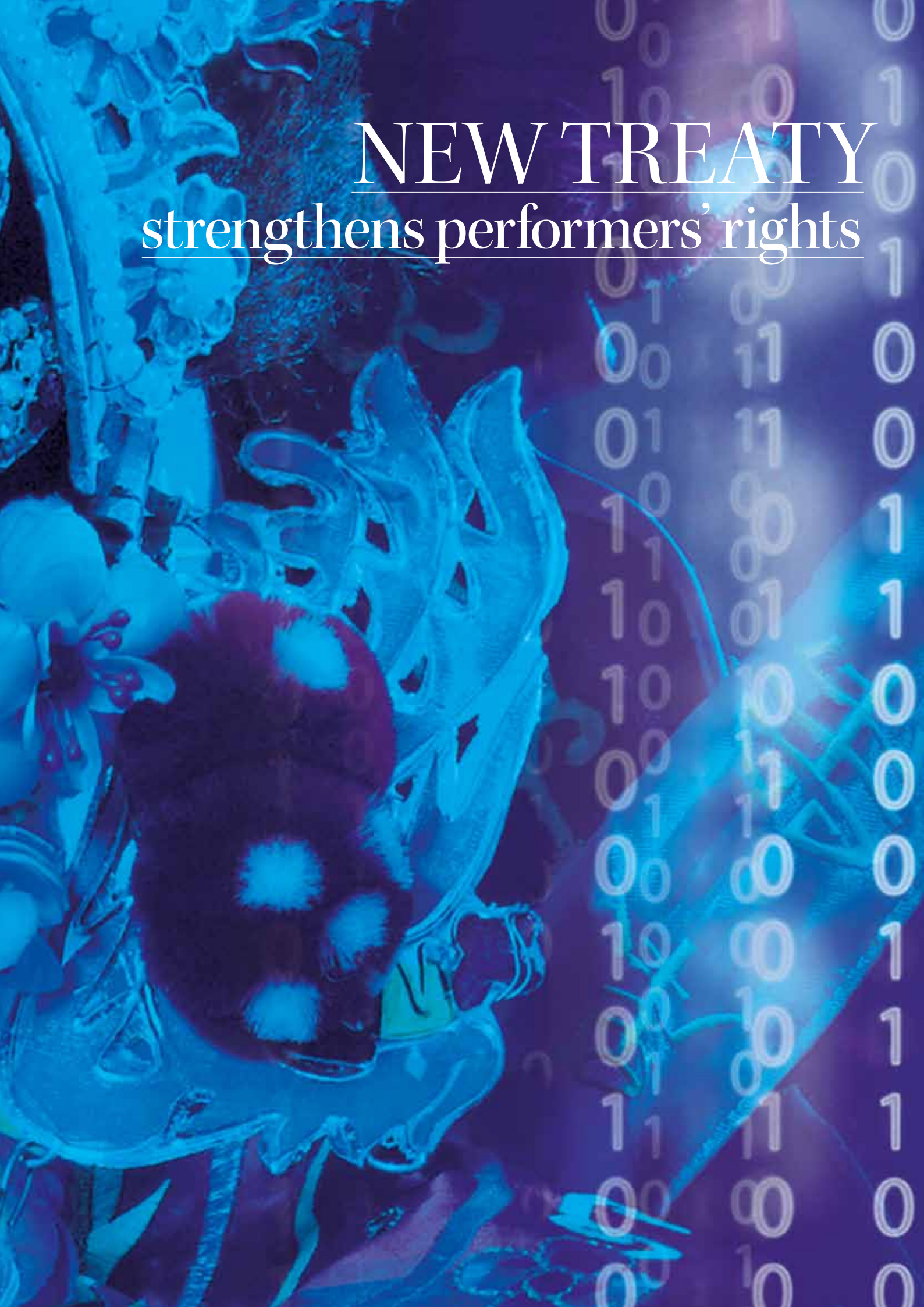

NEW TREATY
strengthens performers' rights

For the first time in over 60 years, the intellectual property (IP) rights of actors and other audiovisual performers have been expanded and comprehensively recognized in international copyright law. A new treaty concluded in Beijing on June 26, 2012, will strengthen the economic and moral rights of performers in their audiovisual performances. The Beijing Treaty on Audiovisual Performances – so named in honor of the city hosting the final negotiations – will enter into force upon ratification by 30 eligible parties, including countries and certain intergovernmental organizations. WIPO Magazine considers what this new treaty, over 15 years in the making, means to performers around the world.

IMPACT OF THE BEIJING TREATY

The Beijing Treaty on Audiovisual Performances will strengthen the precarious position of many struggling film actors and other performers by providing a clearer international legal framework for their protection. It will give performers stronger economic rights and valuable extra income. Exactly how much will depend on how the treaty is put into national legislation and implemented in practice. The Treaty provides a legal framework setting an expectation that countries that become party to it will pay for the use of foreign audiovisual performances, and encourage some or all of that revenue to go to the performers involved, the vast majority of whom earn very little. For example, this could mean that when a film is reproduced, sold, rented or broadcast in a foreign country, some money would go to the country of origin and can then be shared with performers. "In the same way that writers and composers depend upon royalty income for their survival in the long term, performers around the world must benefit as well from the income from the exploitation of their works," explained Academy Award-winning actress Meryl Streep in the lead-up to the Diplomatic Conference.

The Beijing Treaty will also provide performers with protection in the digital environment, giving them some measure of control over how and when their works – their films and videos – are used on the Internet. "This is a pivotal time in the performers' battle for IP protection, because of the increased variety and use of digital technology that makes producing, manipulating and disseminating an artist's work so easy," Ms. Streep observed.

The career and livelihood of actors "depend on the control of our performances and our image and likeness. Sadly, many actors do not have control of their performances and do not have the right to fair and equitable compensation for the use of their faces, bodies and voices," said Segun Arinze, President of the Actors Guild of Nigeria. In many countries the Treaty will mean that the performances of actors in audiovisual works such as movies, television programs and pop music videos will be protected for the very first time.

Photo: WIPO/ XU Zhen, 2012

Photo: WIPO/Yuan Wenming, 2012

Photo: WIPO/Yuan Wenming, 2012

WIPO Director General Francis Gurry says that the Beijing Treaty is both a triumph for audiovisual performers and a victory for multilateralism.

Mr. Liu Qi, Member of the Political Bureau of the Central Committee of the Communist Party of China (CPC) and the Secretary of the CPC Beijing Municipal Committee, described the Treaty as the pride of Beijing. "Respect for IP is a must," he said . "We will grasp this opportunity to further strengthen intellectual property and build Beijing as the first city of IP."

China State Counselor Liu Yandong reaffirms the Chinese Government's commitment to IP protection.

How a treaty enters into force

A treaty enters into force upon ratification by a prescribed number of eligible parties. Countries often sign a treaty upon its adoption. This constitutes a preliminary endorsement and demonstrates a country's intent to examine the treaty domestically with a view to ratifying it. Signing a treaty, however, does not create a binding legal obligation to ratify it.

Ratification or accession by a state signifies its agreement to be legally bound by the terms of the treaty. Although accession has the same legal effect as ratification, the procedures differ. In the case of ratification, the state first signs and then ratifies the treaty. The procedure for accession involves a single step and is not preceded by an act of signature. Countries that have signed a treaty generally ratify it when their domestically required legal procedures have been fulfilled. Other states may begin the domestic approval process and accede to the treaty once their domestic procedures have been completed without having first signed the treaty.

"Digital technology and the Internet offer the promise of a global audience and the unprecedented availability of creative works. At the same time, they make creative works increasingly vulnerable to unfair exploitation," explained WIPO Director General Francis Gurry. "The Beijing Treaty will enable performers to interact with greater confidence with the digital environment," he said.

In addition to enhanced economic rights, the Beijing Treaty grants performers moral rights to prevent lack of attribution for or distortion of their performances. Actors and other audiovisual performers will also enjoy a minimum term of 50 years of protection compared to the 20-year term previously available under the 1961 Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (the Rome Convention).

The Treaty effectively brings the rights of actors and performers into line with those available to musicians and recording artists under the WIPO Performances and Phonograms Treaty (WPPT) concluded in 1996. "The conclusion of the Beijing Treaty is an important milestone toward closing the gap in the international rights system for audiovisual performers," Mr. Gurry said. "The international copyright framework will no longer discriminate against one set of performers."

ACTORS WELCOME A LANDMARK VICTORY

For many actors around the world who have been driving the process, the conclusion of the Beijing Treaty is a historic landmark and an important turning point. "Finally… audiovisual performers are not second-class citizens. Along with audio performers, producers and authors, we are now recognized as having economic and moral rights over the content that we perform in," said Australian actor Simon Burke. "It's crazy that it hasn't happened before, but it's just so, so important that it has happened now," he added. "It is something that is so right, so just and it's finally coming true."

"Actors all over the world will be actually able to keep on working and be protected when they work," said Agnete Haaland, Norwegian actress and President of the International Federation of Actors (FIA). "We have been working for this for more than 20 years… to make it possible for actors to keep on acting and for the audience to actually have the privilege of seeing all kinds of films… all kinds of audiovisual content," noted Benoît Machuel, cellist and representative of the International Federation of Musicians.

"This is a very exciting moment, I think, for actors around the world," said Jean Rogers, Vice President of the British actors' union, Equity. "This treaty will actually put on record how important our role is," she said. "We interpret what people write. Writers have had these intellectual property rights, but audiovisual performers have not. But now, the future is starting to open up for us," she said "and the value of performers is now being recognized."

Chilean actress and representative of LatinArtis, Esperanza Silva, urged governments to implement the treaty as soon as possible, because "this treaty is going to benefit not only performers but the world's culture in general."

A VICTORY FOR MULTILATERALISM

Not only does the conclusion of the Beijing Treaty represent a triumph for actors and other audiovisual performers, it is also a victory for multilateralism. "It is an affirmation of the relevance of multilateralism in general, and of multilateral rule-making in the field of intellectual property in particular," Mr. Gurry said. This sentiment was echoed by delegations taking part in the discussions. "I have been impressed in listening to the concluding statements by the number of delegations who have underlined the importance of the Beijing Treaty and this diplomatic conference for multilateralism," Mr. Gurry said in his closing remarks. "This is a great development for intellectual property. It will help us to deal with our ongoing normative agenda at WIPO in the spirit that has developed at this conference in Beijing," he added.

As hosts of the Diplomatic Conference to conclude the Beijing Treaty on Audiovisual Performances, the Chinese authorities underlined the importance that China attaches to IP. "The Chinese Government has a very clear attitude and strong position on the protection of IP," said China State Counselor Liu Yandong in her opening remarks to delegates. She said that

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Photos: WIPO/Yuan Wenming, 2012

From Berne to Beijing

The journey from Berne to Beijing spans some 120 years. The Berne Convention for the Protection of Literary and Artistic Works, concluded in 1886, marked the dawn of the international copyright system. It protects the IP rights of authors and artists in their creative works.

The development of a new industry around silent films and, soon after, talking pictures meant that, for the first time, performers – such as actors and singers – were being recorded, and their performances reproduced and widely distributed to audiences at home and abroad. The reach of these productions extended well beyond that of a live audience. This was one important reason for concluding the Rome Convention in 1961. While the Rome Convention provides protection for audio performers, it only offers audiovisual performers limited rights.

The conclusion of the WIPO Performances and Phonograms Treaty (WPPT) in 1996, and its subsequent entry into force in 2002, modernized international standards of protection for musicians in their sound performances. Audiovisual performers and their performances, however, remained largely unprotected by international law. The Beijing Treaty concluded in 2012, brings actors and other performers into the international fold, providing them with rights equivalent to those available to musicians and recording artists.

China is "determined to step up its implementation measures to protect IP. We wish to establish a sound and effective IP strategy and system with a view to unleashing the dynamism of science and technology," she said.

Beijing Deputy Mayor Lu Wei said that "the decision to entrust Beijing to host this Diplomatic Conference is a reflection of both trust in and honor to Beijing, which we will take as an opportunity to speed up our efforts in scientific and technological innovation, as well as in cultural innovation, and to constantly improve our systems for IP creation, management, protection and utilization." The Beijing Municipal Government, he noted, "is strongly committed to improving the administration of IP rights protection and ensuring an enabling environment for innovation and creativity to prosper."

The Beijing Treaty will enter into force when it has been ratified by 30 eligible parties, including countries or certain intergovernmental organizations. Some 48 countries signed the treaty upon its adoption, signaling their intent to seriously examine the treaty domestically and consider ratification.

BEIJING SPIRIT: an inside view

On arrival at Beijing airport, Asia's busiest, over 650 delegates participating in the WIPO Diplomatic Conference on the Protection of Audiovisual Performances in late June 2012 were warmly greeted by a team of Conference hostesses – part of an extensive group, including some 200 volunteers that worked behind the scenes to ensure the smooth running of this historic event.

Red and white banners and massive billboards announcing the Diplomatic Conference aligning the 32-kilometer stretch of highway from the airport to the city, and placed at other strategic locations, left no doubt that Beijing was to be the copyright capital of the world from June 20 to 26, 2012.

Our Chinese hosts worked around the clock to ensure that everything was in order for their international guests. The Conference took place at Beijing's World Trade Center in a ballroom which just 72 hours prior to the June 20 opening was completely empty of conference equipment. Technicians worked tirelessly to ensure that the two conference rooms met United Nations conference standards, installing equipment that included sound-proofed interpreters' booths, chairs, desks and microphones, as well as a number of huge screens so delegates could see the podium from every angle.

The high-level participation of Chinese government and municipal authorities was a clear indication of the event's importance to the country. In the course of the week-long conference, key dignitaries visited the conference venue, including Mr. Wang Qishan, Vice Premier of the Chinese State Council and Mrs. Liu Yandong, State Counselor who also opened the conference as well as Mr. Liu Qi, Member of the Political Bureau of the Central Committee of the Communist Party of China (CPC) and Mr. Guo Jinlong, the Mayor of Beijing, both of whom participated in the closing ceremony. Over 130 local and foreign journalists registered to cover the Conference.

The 650-plus delegates from 156 WIPO member states, 6 intergovernmental organizations and 45 non-governmental organizations – the highest number in WIPO's history – worked hard to lay the groundwork for the treaty's adoption on June 26, 2012. Forty-eight countries signed the Beijing Treaty on Audiovisual Performances, and 122 delegations signed the Final Act – another record in the history of diplomatic conferences at WIPO.

The serious business of treaty-making was punctuated by some lighter entertainment, including a WIPO Award Ceremony and a dazzling concert, featuring artists from the five continents, held in the Great Hall of the People. The 3,000-strong audience was treated to a star-studded program including a guest appearance by award-winning actor Jackie Chan. Having completed their substantive work a day early, delegates also had an opportunity to visit the Great Wall of China.

With the new treaty adopted, delegates packed their bags to return home, passing once more through Beijing's international airport. In the departure lounge, we passed an eye-catching billboard with the words "Beijing Spirit" – defined as "patriotism, innovation, inclusiveness, virtue". The Diplomatic Conference certainly embodied the Beijing Spirit. ◆

Photo: WIPO/Yuan Wenming, 2012

Acclaimed actor, action choreographer, comedian, director, producer, martial artist, screenwriter, singer and stunt performer Jackie Chan expresses his support for the Beijing Treaty.

MANAGING PERFORMERS' RIGHTS: the role of contracts

*By **Katherine Sand**, Former General Secretary of the International Federation of Actors (FIA)*

While the recently adopted Beijing Treaty on Audiovisual Performances formally recognizes and strengthens the economic and moral rights of performers, an interesting complementary study of the management of performers' rights and working conditions has been commissioned by WIPO. This involves a neutral and non-prescriptive review of the role of contracts in the audiovisual industries.

In the past, understandably, WIPO has focused little on copyright contracts. Any government involvement in the international harmonization of copyright contracts could be contentious, even if it were legally possible. Contracts are, by their nature, private agreements between parties that are governed by national law and are the product of free negotiation. So why commission a paper on the subject?

To answer this question, it is worth taking a step back and looking at the realities of the film and television industries. Contracts are all about the regulation of relationships and, as anyone who has sat through the lengthy final credits of a movie or a television program will realize, filmmaking or "audiovisual production" is an exceptionally collaborative art form, bringing together the contributions and expertise of a large number of people. At the center of these highly complex, creative and technical creations are the producers whose behind-the-scenes efforts bring together not only the resources but also the myriad moving parts that go into the making of a film.

Each of a producer's relationships related to a production requires a contractual agreement, including with the most prominent among the creative contributors, the audiovisual performers (actors, dancers or stunt performers, for example). It was the intellectual property (IP) rights of these performers that took center stage at WIPO's Diplomatic Conference in Beijing in June 2012.

Contracts between producers and performers are an essential part of the jigsaw puzzle of audiovisual production. They establish the way in which IP rights are handled, as well as the rights and obligations of producers and performers with respect to each other and to the production itself. Put simply, contracts have the potential to translate legal provisions into economic reality – one that is beneficial to all parties.

It is certain that the Beijing Treaty strengthens the precarious position of film and television actors by providing a clearer legal basis for the international use of audiovisual productions, both in traditional media and in digital networks. It will contribute to safeguarding the rights of performers against the unauthorized use of their performances.

However, IP rights, including those flowing from an international treaty, go hand in hand with contracts, which are both a means of expressing and conveying IP rights and a tool to help producers do their job effectively and achieve legal certainty.

Government representatives have spent years discussing performers' rights in WIPO. The adoption of the Beijing Treaty therefore makes it an exciting time for the audiovisual industry. One interesting aspect of these discussions has been the growing international understanding of the legal and cultural traditions of different countries and the way these influence the treatment of performers in law. These varied national conditions have greatly informed the international debate, which has, at times, been a turbulent sea to navigate. In some legal systems, performers' contributions to a film are viewed as "work made for hire" for which the producer is considered the author of the audiovisual work. In other countries, performers' rights are very much like authors' exclusive rights and are exercised as such. Many other countries have hybrid systems and, in some places, performers still have few or no legal rights at all.

Photo: istockphoto © Camilo Jimenez

What has become clear in the discussions is that a single element is common to the vast majority of these systems – the performer's contract.

The WIPO review refers to a wide range of contracts, from the very basic, which mainly specify payment and hours to be worked, to those with very detailed, collectively negotiated terms, in countries with highly developed film and television industries. These terms can include secondary payments when the work is reused, for example, when a film is shown on television or sold as a DVD or when television programs or commercials are repeated. They also set out standards for working conditions, obligations for performers and a range of other elements.

Contracts are closely linked to bargaining power. In developing countries with relatively little audiovisual production, performers and producers are less likely to be collectively organized. Performers will, almost inevitably, have a weaker voice in any negotiations, even if they are valuable "stars". It is widely accepted that collective organization offers a positive way forward for both contractual parties. For years, the International Federation of Actors (FIA) has helped to establish guilds and unions of performers in emerging and developing countries, to train and inform collective counterparts for producers to deal with and, in this way, to develop social dialogue. Similarly, organizations of audiovisual producers are organized through their international entity, the International Federation of Film Producers Associations (FIAPF), in order to promote and build national film industries and good practice.

It is taken for granted that all parties working in the film industry aim to stimulate production. Recent decades have witnessed a significant amount of production in many countries that is "international" in nature, with filmmakers travelling to foreign countries to take advantage of diverse locations, lower production costs, financial incentives and possibly favorable exchange rates. International production can be of great benefit to the country in which a film is set, bringing in foreign exchange, foreign direct investment and generating employment and economic activity. Equally important, international production can also help support and sustain local, indigenous film production. All this works in favor of local producers, performers and production industries as long as all of their contracts are enhanced and not exploited by it.

It seems clear that, along with having top-notch laws (which many countries do), contracts play an important role in stimulating economic activity and translating legal provisions into economic reality. WIPO's acknowledgment of the importance of contracts and its willingness to support dialogue and training in this area go hand in hand with the process of international norm-setting. It is now up to the parties themselves. The more national organizations of performers and producers work together to improve contractual practices, support their industries and improve the quality of their "social dialogue", the more IP rights will have meaning and bring economic benefits to all. ◆

The WIPO Review of Contractual Considerations in the Audiovisual Sector is available at:
www.wipo.int/copyright/en/activities/pdf/review_of_contractual_considerations_in_av_sector.pdf

Photo: http://americanart.si.edu/images/pr/exhibitions/the_art_of_video_games

VIDEO GAMES: 21st century art

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

Photo: Nintendo of America, Inc.

Photo: © SEGA. All Rights Reserved.

Pac-man developed by Namco and designed by John Romero was first released in Japan in 1980. A landmark in video game history, it is regarded as one of the most influential video games of all time. *Pac-Man* is one of the few games to have been published in various forms and for diverse platforms over three decades.

Super Mario Brothers 3: Shigeru Miyamoto, Takashi Tezuka, Hiroshi Yamauchi, directors; Satoru Iwata, executive producer; Konji Kondo, composer. Nintendo Entertainment System, 1990, Nintendo of America, Inc.

Marble Madness: Mark Cerny, Steve Lamb, SEGA Master System, 1992.

They thrill, exhilarate and inspire. In just four decades, video games have become an increasingly popular form of mass entertainment, a powerful and exciting platform for innovative art and a multibillion dollar industry.

The highly interactive, sleek, realistic and fascinating worlds created in contemporary video games are a far cry from the clunky, pixilated aliens featuring in classics such as *Space Invaders* and *Pac-Man*. Contemporary video games are an amalgam of traditional art forms – including music, narrative, sculpture, painting and storytelling – and are increasingly recognized as an artistic medium in their own right.

In 2011, the US Supreme Court put video games on a par with other traditional artistic media stating, "like the protected books, plays and movies that preceded them, video games communicate ideas – and even social messages – through many familiar literary devices (such as characters, dialogue, plot and music) and through features distinctive to the medium (such as the player's interaction with the virtual world)."

From March to September 2012, the Smithsonian American Art Museum is hosting an exhibition entitled, "The Art of Video Games", which celebrates the phenomenal evolution of the medium's art and design spanning the 40 years since video games moved from the arcade into the home.

Curated by video game enthusiast and former Gaming Chief of Sun Microsystems, Chris Melissinos, the exhibition showcases 80 games for 20 systems (ranging from Atari VCS to PlayStation 3), marking different eras of video game development. Featured games were selected through an online vote by 119,000 people from 175 countries. **WIPO Magazine** explores why video games stand out as an artistic medium, drawing on interviews with some of the medium's most influential artists and designers.

Since the first pixel winked on the screen of the first home computer console (the Magnavox Odyssey) in 1972, computer game enthusiasts have pushed the boundaries of technological development to create increasingly interactive and sophisticated game environments. This phenomenal evolution is akin to "a leap from cave painting to impressionism in just a few decades," according to Chris Melissinos.

The imagined worlds created in contemporary games offer richly textured, emotional and social experiences that have crossed the boundary into culture and art. "Anything a human does has the potential to express art. There is no difference between digital and traditional; they are just different technologies that

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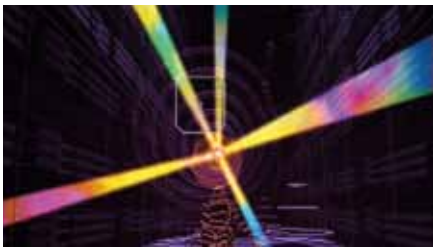
Photo: © SEGA. All Rights Reserved.


Photo: © Nintendo of America, Inc.

Video games and IP

COPYRIGHT

Copyright protects original artistic and literary expressions. Generally speaking, the underlying software on which a video game runs is protected as a literary work, and the artwork and sound are protected as an audiovisual work. Under the terms of the Berne Convention for the Protection of Literary and Artistic Works (1886), which set minimum standards in international copyright law, protection is immediate and automatic and there are no formal requirements to register a work for it to be protected, although in some jurisdictions it is advantageous to do so.

The artwork in a video game enjoys copyright protection insofar as no one has the right to copy the creator's original work. Certain standard and commonplace elements of the artwork in video games, however, fall under the doctrine of *scenes à faire*. These elements are not copyrightable to the extent that they are necessary to execute a particular genre of work. Copyright does not protect ideas as such; for example, a game of golf will always include holes, golf balls, golf clubs, golfers, grass, trees and water. While it is not legal to copy these elements verbatim from another golfing game, video game designers have the right to include such standard elements in their games.

TRADEMARKS

Trademarks protect the goodwill and reputation of a company or video game as a brand. The titles or names of video games are typically protected as trademarks. Protection may be acquired through its long-term use – such unregistered marks carry the symbol ™ – or through formal registration – bearing the symbol ® – with the national trademark office of the country in which the game is commercialized. A trademark is a valuable commercial asset that allows an entity to build its reputation in the marketplace. It also ensures there is no confusion among consumers as to the origin of the product or service. Competing games that share similarities can be made distinctive – thereby avoiding any threat of trademark violation – by the name or mark that each adopts.

PATENTS

The functional elements of a video game – the game controllers and consoles – are protected by patents. Broadly, patents are granted for technologies that are new, useful, non-obvious or that have an inventive step.

Panzer Dragoon II: Zwei, Yukio Futatsugi, Manabu Kusunoki, original designer: Kentaro Yoshida, art director, SEGA Saturn, 1996

Rez: Tetsuya Mizuguchi, producer, Jun Kobayashi, director; Katsumi Yokota, art director and lead artist, SEGA Dreamcast, 2001

The Legend of Zelda: Twilight Princess: Shigeru Miyamoto, executive producer; Eiji Aonuma, director, Satoru Takizawa, art director; Eiji Aonuma, Satoru Iwata, producers, Nintendo Wii, 2006, Nintendo of America, Inc.

people invented to be expressive. They are all art," notes Jenova Chen, creator of the game *Flower*.

Many believe the medium's rapid development is just the tip of the iceberg. "What we have seen from games so far is just the beginning of what this medium is capable of doing," notes Henry Jenkins, a video game scholar. "Games have become an art, but I think they can become a richer and deeper art."

TECHNOLOGY: AN ENABLING PLATFORM

Rapid technological developments have driven the evolution of video games. In the early days, the idea of computer graphics telling a story was so fresh that video game pioneers relied heavily on players' imaginations. "The obligation… was heavily on the user withholding suspension of disbelief," video game producer Don Daglow explains. In certain eras, the capacity of computers in terms of power and space was simply not sufficient to allow the narratives and interactivity that exist today to emerge.

"It used to be [the case] that the hardware engineers would put together cool technology and then throw it at the software guys and say, 'here, figure out what you can do with this,' and the software guys… would not only learn how to use it but they would always try to drive it to its maximum limits… evolving it into a more powerful system," explains video game pioneer R.J. Mical. The push to develop the mechanics for improved video game design has, in turn, driven technical improvements in sound and graphics cards, and CD-ROM and DVD-ROM drives. Today, modern games are among the most demanding of computer applications. Internet connectivity has also opened new doors for creativity and is considered the single largest advance in the development of video games.

In the 1970s, the technological limitations were such that designers made their own graphics and sounds, wearing the hat of director, art director and musician. "We even wrote the manual and designed the box," notes video game designer Steve Cartwright. "*Pitfall* evolved out of a lot of trial and error. Having succeeded in making a man run on the screen, they contextualized the game to make it look like he was running in the jungle. All you need is the faintest kernel of an idea… you work on perfecting that little nugget until it feels fun, and you build upon that," he says.

Similarly, the original design of the iconic game character, Mario, was the result of technological limitations. Created in the early 1980s, his designer, Shigeru Miyamoto, had used just seven pixels to draw his face. "My goal within that limited palette was to create a character that was as distinct as possible," he recalls. This explains his big nose, moustache and hat – the designer was not keen on drawing hair. Mario has since appeared in over 200 games, becoming an icon of popular culture. "Super Mario is to games what Mickey Mouse is to cartoons," notes Ed Barton, Director of Digital Media at Strategy Analytics.

AN INFLUENTIAL FORM OF NARRATIVE ART

In today's interconnected world, video games are an increasingly popular form of mass entertainment. Their compelling and influential narratives and photo-realistic images are shaping the way many socialize and learn. Video games stand out as an artistic medium, because they offer an immersive experience that can educate as well as distract.

Chris Melissinos believes that, while video games include classic elements of art, they "offer designers a previously unprecedented method of communicating with and engaging audiences by including a new element – the player." He believes "video games are the only form of artistic expression that allows the authoritative voice of the author to remain true while allowing the observer to explore and experiment… No other medium affords the world this incredible opportunity."

Jesse Schnell notes that the fantasy role-playing game *Dungeons and Dragons* marked a turning point in her life as a designer. It made her realize that games offered a "world that was limitless… and that you could make the imaginary real in a tangible way." Always fascinated with creating entertainment experiences "that make people say 'wow'," she says that, as "video games are always integrating new techniques… there are more ways to give people that kind of experience."

The pros and cons of video gaming remain a hotly debated issue. Many proponents, however, feel they offer players a unique opportunity to gain personal insights and acquire skills. When playing a game, "you feel you've succeeded in learning something, and you are good at it," notes video game developer Mike Mika. It is a medium in which players "can learn something about the world and about themselves," says video game producer Warren Spector. This is what drives players to come back again and again to relive that experience.

No other form of entertainment puts players "in the shoes of the main character and lets them make choices that will have consequences ultimately," muses David Cage. "We play games to get some useful information that is somehow linked deep in our brains to survival skills. With a game, it's about what I should do, what skill should I evolve and what choices should I make," explains video designer Noah Falstein.

Video games are a complex interplay of storytelling, graphics and music underpinned by technology which provides the mechanics that make it possible to weave together a thrilling experience for players. The story provides a context for players' actions and choices, and gives the games significance, explains Warren Spector.

As in film, music plays a key role in enriching the narrative of video games. Game music has also come a very long way. "The original composers were essentially programmers who had musical chops… In the last 10 years, the system has changed

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Photo: courtesy of 2K Games, Inc. and Take-Two Interactive Software, Inc.

and come to resemble the model used in the film industry (freelance composers working with a production company)," observes Austin Wintory, a game music composer. For him, the technical capabilities for audio have made it "one of the best times in history to be a working composer".

Fellow composer Tommy Tallarico, founder of Video Games Live, also underlines the enormous musical possibilities contemporary video games offer. "Games have become so massive now, and there are so many things you can do." Whereas the games of the past required about 50 sound effects, contemporary games have around 100 hours of game play, 25,000 lines of dialogue and 7,000 different sound effects. "We're doing things now that Beethoven and Mozart never dreamed would be possible," he enthused. "We're able to branch out interactively. I can layer different elements depending on what's happening on screen and what the player is doing. The player becomes the conductor on the stage. The massiveness of it all is overwhelming. At no time ever in the history of the world has more music been played more times than in video games right now," he explains. "I've always said if Beethoven were alive today, he'd be a video game composer."

A DREAM COMING TRUE

For the pioneers, contemporary games, such as *Uncharted Two and Among Thieves* (2009), "are what we used to dream about 20 years ago becoming a reality," notes R.J. Mical. Despite the medium's phenomenal evolution over the last 40 years, there is a sense that much more is to come. "Interactive entertainment is still in its infancy; it's similar to the early days of the film industry," notes Megan Guiser, President of Her Interactive. "The digital economy is changing the way we interact, the way we do business and the way we play. The rules are changing, and creativity is the equalizer," she says.

Pioneering video gamer and founder of Atari Jeff Bushnell is unequivocal about the continuing importance of this exciting platform for innovative art: "the next big wave of competition is going to be that of creativity, and I believe that video games, more than anything else, foster the mindset that will allow creativity to grow."

"The Art of Video Games", which runs until September 30, 2012, is one of the first major exhibitions to explore the art and craft of this increasingly powerful, expressive medium that seems set to become the major art form of the 21st century. ◆

Jenova Chen, creative director; John Edwards, lead engineer. Developed by thatgamecompany, LLC, Playstation 3, 2009, Sony Computer Entertainment America LLC.

GUARANTEEING ACCESS TO KNOWLEDGE: The role of libraries

*By **Ben White**, Head of Intellectual Property, British Library* *

As gateways to knowledge and culture, libraries play a fundamental role in society. The resources and services they offer create opportunities for learning, support literacy and education, and help shape the new ideas and perspectives that are central to a creative and innovative society. They also help ensure an authentic record of knowledge created and accumulated by past generations. In a world without libraries, it would be difficult to advance research and human knowledge or preserve the world's cumulative knowledge and heritage for future generations. Libraries are keenly aware of the need to maintain the balance between protecting the rights of authors and safeguarding the wider public interest. Copyright exceptions, which are currently under discussion in WIPO's Standing Committee on Copyright and Related Rights (SCCR), form an integral part of national copyright systems. They play an essential role in enabling the delivery of library services to the public and in achieving the copyright system's goals of encouraging creativity and learning. This article explores the enduring importance of libraries and some of the intellectual property-related challenges they face.

Libraries represent different things to different people – from a place where mothers can take toddlers to read their first stories and students can study, to a service allowing anyone to borrow a book, access the Internet or do research. Quite simply, libraries offer a means by which we can gain access to knowledge.

SUPPORTING EDUCATION

Libraries are synonymous with education and offer countless learning opportunities that can fuel economic, social and cultural development. The inspiring story of William Kamkwamba from Malawi underlines the difference a library can make. Having borrowed a book about windmills from his local library, Mr. Kamkwamba learned how to build an energy-producing turbine for his village. On the strength of this experience he went on to study at a leading US university. That one book not only changed his life; it also transformed the lives of those in his village community. Such stories explain why many countries are eager to ensure that libraries continue to provide access to knowledge, learning and ideas.

In addition to lending books, libraries are also involved in copying materials for research or private study purposes. Students cannot afford to buy every book, or pay for every television broadcast or journal they need to access for their studies. They therefore rely on the services of a library.

The exceptions and limitations that are an integral part of many national copyright systems play a critically important role in enabling libraries to deliver such services. For example, they allow libraries to make copies, on behalf of students and others for research or study purposes, of works that might not otherwise be directly accessible to them. Libraries also make interlibrary loans possible, providing local access to materials that normally reside in a library hundreds, or even thousands, of miles away. Just five years ago, applying the concept of interlibrary loans to digital works was problematic. However, with the widespread availability of electronic platforms that effortlessly control access to content, such as iTunes and Kindle, and the

* Mr. White chairs the Conference of European National Librarian's Copyright Working Group. He also sits on the UK Intellectual Property Office's Copyright Research Advisory Group. The views expressed in this article are Mr. White's and may not reflect those of the British Library.

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expansion of electronic interlibrary loans by some research libraries – although there is still some way to go in discussion with publishers – this is no longer the insurmountable problem it may have appeared to be a few years ago.

PRESERVING CULTURAL HERITAGE

Recognizing the cultural importance of sharing, Mahatma Gandhi said that, "no culture can live, if it attempts to be exclusive". The stimulus to share and reuse information and knowledge comes in many guises. Perhaps the most deep-rooted of our human instincts is the desire to preserve our culture for future generations. This is one of the most important functions of libraries.

Libraries are rich repositories of historically and culturally significant collections, many of which are not available anywhere else in the world. Without an appropriate copyright exception, a library could not preserve or replace a damaged work while it is still covered by copyright. For example, it could not lawfully copy or digitize an old newspaper or a unique sound recording to preserve it. Without appropriate library exceptions, this cultural heritage would be lost to future generations.

Today, many works are only "born digital", such as websites or electronic journals, and are unavailable in print format. Without the legal means to preserve and replace works in a variety of media and formats – including format shifting and migrating electronic content from obsolete storage formats – many of these works will inevitably be lost to future generations of historians.

THE ROOT CHALLENGES

The challenges facing libraries are linked in large part to the fact that, while international copyright agreements guarantee exclusive rights for authors and other right holders, the interpretation of the exceptions and limitations that entities such as libraries depend on in order to provide their services is left to national parliaments. In sum, exceptions and limitations are national and optional, whereas the rights accruing to right holders are international and guaranteed.

In 2008, WIPO commissioned a study on *Copyright Limitations and Exceptions for Libraries and Archives*. The study found that statutes relating to library exceptions differ greatly from one country to another. It also found that, of the 149 countries surveyed, 21 had no library exceptions in their copyright laws, and 128 had at least one statutory library exception, with many, most often in developed countries, having multiple library-related provisions. Even where library exceptions to copyright laws do exist, however, they generally date from the pre-Internet age and now need to be updated and adapted to the digital environment.

The study's findings highlight the important role that library exceptions play in enabling library services, and how they facilitate knowledge acquisition by students, citizens, businesses as well as academic researchers. They also point to the need for

Photos: British Library

The same digital file – pre- and post digital corruption.

a common approach to ensuring equitable access to knowledge, and to providing libraries with the legal means to preserve the unique cultural, artistic and scientific heritage of each country.

THE OPPORTUNITIES OF MASS DIGITIZATION

The Internet has created tremendous opportunities in terms of accessing knowledge. Making the collections of the world's great libraries available to the public through large-scale digitization, however, has yet to be realized. While it is difficult to foresee the full implications of such an undertaking, the benefits promise to be widespread and powerful.

One particularly moving example of the benefits of mass digitization comes from my own library, the British Library. A number of years ago we digitized a series of 20th century recordings from Uganda and put them online. We were subsequently contacted by a student at Sheffield University who explained that some of the recordings were of Ugandan royal court music, an art form that had all but disappeared. Given the historical importance of the recordings, we made copies for Makerere University in Kampala, and Ugandan musicians are now trying to piece together how to play this unique music once again.

Today's citizens want access to information online. While libraries have some funds to digitize collections and put them on the web, the many challenges of clearing intellectual property (IP) rights in in-copyright materials (combined with the fact that copyright can reach back as far as the 1870s) means that libraries often prefer to digitize out-of-copyright material. This has led to what is referred to in the European Union as the "black hole of the 20th century."

Libraries have no desire to undermine vibrant markets, but evidence suggests that there is little market activity for many older in-copyright works. A report by the French government (*http://tinyurl.com/cmnopz5*), submitted to the French Senate supporting a new law to enable mass digitization, estimates that 57 percent of works published in France since 1900 are either orphan works – works whose creators or right holders cannot be identified or traced – or out of commerce, the only means of accessing them being from a library.

Studies suggest that while the scale of the orphan works problem varies, the number of such works can be relatively high, even with books that have a long history of well-organized and professional production and distribution. A recent European Union-funded study entitled "Seeking New Landscapes" (*http://tinyurl.com/c2vkyjc*), for example, found that 42 percent of randomly selected monographs from 1870 to 2010 were orphan works. In many countries, reuse of such works is unlawful without the express permission of the right holders. Finding an appropriate and lawful means to deal with orphan works, therefore, is a key element in opening the way to mass digitization.

While large libraries, and indeed Google, have digitized parts of their out-of-copyright collections, legally digitizing copyright-protected materials on a large scale remains a pressing issue. Since 2005, the European Commission has sought ways to address these legal complexities. While the 2012 Orphan Works Directive appears to be useful for the digitization of niche collections, it is still unclear when Commission activities will translate into effective legislation that will support the mass digitization of 20th century in-copyright works – collections, of course, that are largely preserved in national libraries and museums at the expense of the tax payer.

CONTRACT LAW VS COPYRIGHT LAW

Despite its many benefits, the digital age has, unfortunately, caused an erosion of copyright law in that the act of using purchased digital content is no longer regulated

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A record in need of conservation and preservation work. Without appropriate exceptions a library cannot preserve or replace a damaged work that is still covered by copyright.

by copyright law but by contract law. Whereas national copyright laws strive to promote creativity by balancing the needs of creators with those of users, this is not expressly the case with contract law.

Copyright laws are designed to foster innovation. They protect the investment of creators in the production of their work, while guaranteeing that others may use that work in support of innovation, competition and learning. Evidence suggests however that private systems of law, such as contract law, do not create this innovative synergy between creators and users but reflect instead a more static, one-sided relationship between content distributors and customers.

A 2007 review of 100 contracts by the British Library shows contracts are systematically undermining copyright law in that existing statutory limitations and exceptions often become null and void under contract law. For example, only 2 of the 100 contracts in the study allowed explicit access by visually impaired persons, and only 23 allowed a library to archive the materials they had purchased.

Despite this fundamental shift, policymakers globally have been slow to recognize that copyright law is increasingly peripheral to regulating access to copyrighted works. From the perspective of libraries, the issues are stark. Billions of euros are spent annually on purchasing electronic materials, but the uses that can be made of this purchased content are diminishing. Moreover, libraries are facing a situation equivalent to one in which, in the analogue world, every book on a shelf comes with a different contract allowing different things. How can access to knowledge be lawfully or practically managed in such a case? Must every citizen, student or researcher become an expert in contract law to understand what they can lawfully do with a digital work? Certainly libraries feel very strongly that policy-makers need to engage in this issue as a matter of urgency to ensure that the positive role that copyright exceptions play in the innovation cycle is not indelibly undermined by private contracts.

The IP challenges confronting libraries today raise a number of fundamental questions about the role of copyright law in fostering innovation and creativity. We in the library community believe that copyright law should continue to be central to innovation policy. Libraries play a key role in fostering literacy and learning, in creating the building blocks of development, and in safeguarding the world's cultural and scientific heritage. We need to act swiftly to ensure libraries can continue to deliver their services effectively, for the public good in all countries. ◆

NAVIGATING US copyright termination rights

*By **Brian D. Caplan**, Esq.,*
*Caplan & Ross, LLP**

In the Copyright Act of 1976, the US Congress gave recording artists and songwriters the possibility to claw back rights to previously licensed works after 35 years. This so-called "termination right" is designed to enable creators to renegotiate the terms of the publishing deals they concluded before the true value of their work was known. The termination right, codified as 17 USC §203, applies to rights assigned from January 1, 1978, on condition they are not "made for hire".

The right, which has significant implications for the entertainment and publishing industries, will first have an impact in 2013. These sectors are understandably closely following related court decisions. One of the first such cases involves Victor Willis, the former lead singer of the 1970s pop band, Village People. In May 2012, a court in California held that Mr. Willis has the right, in 2013, to recapture his interests in the copyright of 33 songs he co-authored, including the iconic hits, "YMCA", "Go West" and "In the Navy." This article takes a closer look at the termination right and some of the key legal issues likely to arise from its application.

LEGAL CONTEXT

Prior to 1976, Congress had attempted to protect authors who had assigned rights in their works before their true commercial value was known. The 1909 Copyright Act, for example, provided an initial 28-year protection period renewable for a further 28 years. This sought to ensure that the copyright in a work revested in the author after the first 28 years, on condition renewal rights had not already been assigned. In practice, to get their works commercially published, authors generally had no option but to assign their rights for both terms of protection.

The 1976 revision of US copyright law introduced a new "termination right" whereby rights must revest in the author before any further reassignment would be valid. For works created after January 1, 1978, the Act provides for a single term of copyright protection – the life of the author plus 50 years (since extended by 40 years). It also provides authors with an inalienable right to "terminate" a grant of copyright 35 years after the grant was made.[1]

THE MECHANICS OF TERMINATION

To exercise this right the assigning authors must terminate their grants within a five-year period beginning at the end of the 35th year from the original grant date (i.e. the 35th to the 40th year) by serving a Notice of Termination on grantees no less than 2 and no more than 10 years before the effective date of termination.

* Caplan & Ross, LLP is a New York City-based law firm that specializes in entertainment and intellectual property litigation.

1. For pre-1978 grants, the Copyright Act continued the renewal term system, but added an additional 19 years of copyright protection to the renewal term (since extended), and provides authors with a commensurate right to terminate grants 56 years after copyright was originally secured. This termination right with respect to the "extended term of copyright" is codified in 17 U.S.C. § 304 and largely mirrors the provisions of § 203.

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Photo: Copyright 2010, VictorWillisWorld.Com

In May 2012, a court in California held that Mr. Willis has the right, in 2013, to recapture his interests in the copyright of 33 songs he co-authored, including the iconic hits, "YMCA", "Go West" and "In the Navy."

Upon termination all copyright interests conveyed under the initial grant revert to the original grantors-creators (even if only two of three executing grantors sign the termination notice) with respect to rights in the US. Outside the US, the rights of the grantee remain unaffected as do those relating to derivative works prepared under the original grant prior to its termination. Authors exercising their termination right, however, do recover the right to authorize new derivative works.

When only one of multiple co-authors effectuates termination, that author becomes a co-copyright owner and may license use of the underlying copyright on a non exclusive basis, subject to a duty to account to the co-owners. If the other co-authors do not terminate, their grantee arrangements remain unchanged. After the effective termination date the right to grant *exclusive licenses* requires the authority and consent of all copyright co-owners – including all co-authors who terminated (or their subsequent assignees).

The obligatory notice period under the Act is designed to mitigate any eventual loss of rights by giving original grantees an opportunity to negotiate a new deal.

THE CASE

The Court's decision in *Scorpio Music, et al. v. Willis*, 11 Civ. 1557 (BTM), 2012 WL 1598043 (S.D.Ca. May 7, 2012) is one of the first to interpret the copyright termination provisions applicable to post-1977 grants. The US District Court sitting in San Diego, California, rejected a publisher's challenge to the validity of a termination notice submitted by Victor Willis. It determined that, from 2013, Mr. Willis has the right to recapture his copyright interests in the 33 songs he co-authored, including "YMCA", "Go West" and "In the Navy".

In the late 1970s, Mr. Willis assigned his copyright interests in these compositions to Can't Stop Music, a Division of Can't Stop Productions, Inc., through a series of identically worded publishing agreements (the "Willis Grants"). While Jacques Morali and others composed the music for the compositions, Mr. Willis claims to be the sole lyricist having separately conveyed his copyright interests in the compositions to Can't Stop. Accordingly, each of the Willis Grants was solely between Can't Stop and Mr. Willis, solely concerned Mr. Willis' interests in the compositions, and was solely executed by Can't Stop and Mr. Willis. Moreover, each of the Willis Grants contained the classic language of copyright conveyance, stating that Mr. Willis, "hereby sells, assigns, transfers and delivers to Publisher, its successors, and assigns, Adaptation [including the title and lyrics thereof]… together with the worldwide copyright thereof…" Each of the Grants provided for Mr. Willis to receive between 12 and 20 percent of the gross receipts generated by the publishers from the songs.

Thirty-three years later, in January 2011, Mr. Willis served a notice to terminate the Willis Grants, providing Can't Stop with the requisite two years' notice ahead of the effective dates of termination in 2013.

MUSIC PUBLISHERS' RESPONSE

Can't Stop and its foreign affiliate Scorpio Music contended that Mr. Willis, as one of at least three credited co-authors, could not unilaterally serve a notice of termination. The publishers further argued that the songs were "works made for hire," and Mr. Willis therefore had no right to terminate the Willis Grants. The publishers also claimed that even if Mr. Willis could terminate the grants, his recaptured copyright interests should be limited to the terms agreed 35 years earlier (12 to 20 percent of each composition, mirroring the income streams to which he had agreed). When Mr. Willis rejected these contentions, the publishers brought suit in San Diego, where Mr. Willis resides, seeking to have the termination notice declared either invalid *in toto* or limited in its breadth.

THE COURT DECIDES

The Court found that because Mr. Willis had granted his copyright interests in the 33 compositions separately and apart from his co-authors, he had standing and the right under the 1976 Copyright Act (17 U.S.C. § 203) to unilaterally terminate his grants to the publisher.

The Court further found that, "upon termination, Mr. Willis would get back what he transferred – his undivided interest in the whole," despite the terms of the Willis Grants. It determined that if Mr. Willis was one of two authors of a composition, he would recapture a 50 percent interest in it.

Another more significant "authorship" issue, relating to a disagreement about who co-authored the compositions with Mr. Willis, remains undecided. The writing credits had been "established" when Mr. Willis had no real bargaining power. He claims that one of the listed "writers" did not in fact contribute to the creation of the compositions and that he and Mr. Morali were the sole authors of many of the Willis Grant compositions. As such, he should recapture a one-half interest in them. The Court's decision alluded to this disagreement but as the original complaint did not squarely put this issue before it, the Court granted the publishers leave to amend their case. On June 5, 2012, the publishers filed an amended complaint addressing this dispute. It is likely that Mr. Willis will recapture, either a 50 percent copyright interest or a 33 percent interest in the compositions if prior co-authorship claims and credits of a third purported writer are deemed as a matter of law not subject to review.

The Willis case also raises another significant issue – the work for hire defense initially used by the publishers, but later withdrawn. In *Community for Creative Non-Violence v. Reid*, 490 US 730 (1989), the Supreme Court established numerous factors to consider in determining whether a work was "made for hire" under the Copyright Act. These include whether the hiring party had the right to control the manner and means by which the product was created; the skill required; whether the hiring party has the right to assign additional projects to the hired party; the extent of the hired party's discretion over when and how long to work; the method of payment; the hired party's role in hiring and paying assistants; the provision of employee benefits; and the tax treatment of the hired party. None of these factors weighed in favor of the publishers in the Willis case.

While songwriters may be able to fend off a work-made-for-hire claim, will the courts give credence to the use of such a defense by a record company in relation to a recording artist's or producer's attempt to terminate post-1977 grants in sound recordings? A record company could argue that it:

- advances all recording costs associated with the creation of the sound recordings;
- has the right to accept or reject the master recordings submitted by the recording artist;
- has the right to select the recording studios and the producers for the projects; and
- engages writers to create musical compositions when the recording artist is not a songwriter.

Moreover, recording agreements typically purport to "acknowledge" that artists work for hire. Similarly, copyright registrations filed by record companies specify that the sound recordings/masters created by recordings artists are "works for hire".

On the other hand, recording artists could argue that:

- great skill and creativity are required to record songs;
- the time and place of recording, often determined by recording artists, is immaterial to the outcome of the final product;
- they often engage their own producers;
- standard recording agreements state that if the recording artist is not a worker for hire, their copyright interests are assigned to the record company;
- they are not treated as an employee with respect to taxes or employee benefits;
- the record company typically does not have the right to assign additional projects to the recording artist; and
- although the record company initially covers the costs of production, these are fully recoupable by the record company from the artist's royalties.

Moreover, recording artists who write their own songs need not rely upon record company involvement in the creative aspects of making records.

As the work made for hire debate makes its way through the courts, the future ownership and control of master recordings and musical compositions created since the late 1970s will be decided. It is clear that the ability of recording artists and songwriters to recapture their copyright interests will dramatically impact the way these works are commercially exploited. Each incremental decision will have lasting effects, as myriad licensing, administration and ownership issues are fleshed out and clarified by the courts. Those decisions will not only affect the music industry, but also, by application, the literary, film, and other industries that depend upon the creation and exploitation of copyrightable works. ◆

Pay-as-you-go SOLAR POWER

While for many people, electrical power is available at the flick of a switch, for some 1.6 billion people around the world without access to grid electricity this remains a dream. An innovative technological and financing solution developed by Simpa Networks, however, promises to transform the lives of some of the world's poorest communities by bringing a clean, low-cost, sustainable energy source into their homes. WIPO Magazine contacted Paul Needham, President and co-founder of Simpa Networks, to find out more about this groundbreaking initiative.

Simpa Networks was established in March 2010 by Mr. Needham, an infotech entrepreneur and his colleagues, Jacob Winiecki and Michael MacHarg, both experts in microfinance. The inspiration for setting up the company and rolling out its novel business model was the rapid adoption of mobile phones in emerging markets. In the rural areas of Africa and Asia, "you can meet some of the poorest people on the planet with some of the latest telecommunications technologies in their hands, and it's changing lives and improving livelihoods". Mr. Needham notes, "the prepaid mobile phone has made modern communications accessible to nearly 6 billion people over the last decade. We asked ourselves: why not sell solar like a cell phone?"

Many of the world's poorest communities rely on kerosene lanterns (see WIPO Magazine 5/2011: *Switching on to Solar – Goodbye Kerosene*) to light their homes, spending over US$50 billion annually on a source of lighting that is "dangerous, dirty and dim", Mr. Needham observes. "Simpa's mission is to make modern energy simple, affordable and accessible to everyone", he explains; "it's a bold mission, but the good news is that the technologies to end energy poverty already exist."

THE ACCESS CHALLENGE

Companies around the world are developing and deploying a range of small-scale distributed solar photovoltaic (PV) systems for use in rural homes and communities where demand for energy is rapidly rising. The high up-front costs associated with these technologies, however, are often a barrier to access,

Changing Lives

Mukesh lives with his extended family in an informal settlement in Bangalore, having resettled from Gujarat following a devastating earthquake. They have no land title and lack access to the electricity grid. The family earns between US$10 and US$15 a day making and selling cricket bats. Mukesh is concerned about his siblings' education. He knows that without light, it is impossible for them to study in the evenings.

The retail price of a home solar system is around US$150, too much for these households to pay on an up-front cash basis. Financing such a purchase was also impossible as these families had no land title. Convinced that a home solar system would perform to meet their needs, they decided to buy a Simpa-powered home solar system. The Simpa pricing model allowed them to try the system and pay on the basis of actual usage in the knowledge that, if the system stopped working, they would not have to pay.

Over the past 12 months, Mukesh and his family have enjoyed access to reliable and clean energy. They use it every day to light their homes, charge their mobile phones (which are essential for their business), listen to the radio and even watch television. Mukesh purchases energy "tops ups" from a local agent 2 to 4 times per month when he has cash available.

At the end of April 2012, the family completed its contract. They now own the system and enjoy clean, reliable electricity free of charge. The other families in Mukesh's community have also either paid off their systems or will do so soon.

Simpa Networks' technology is the subject of an international patent application (PCT/US2011/035781) filed under WIPO's Patent Cooperation Treaty (PCT).

especially for those communities most in need. "Consumers have a proven willingness to pay for energy services, but investors are needed to finance the up-front capital expenditure. To unlock the required capital, investors need to know that their investments will yield the required returns", Mr. Needham explains.

The reality in many rural households is that incomes are meager – sometimes less than US$2 per day – irregular and uncertain. This makes it very difficult to predict cash flows and all but impossible to save. Understandably, these households prefer dealing with purchases that involve small sums of money. "When you think about the profound and tremendous growth of mobile phone services in developing countries, it's really the same pricing model; it's fundamentally, pay as you go. You buy the phone, but the phone doesn't work unless you also by the air time", Mr. Needham explains. "It's a very compelling pricing model and value proposition for people with low, uncertain and irregular incomes."

The company's technology and business model enable the sale of energy as a service. "Simpa has demonstrated that a prepaid, pay-as-you-go pricing model can align interests, decrease risks for the consumers, increase consumer adoption and correctly incentivize vendors and providers to deliver ongoing service", Mr. Needham explains.

HOW IT WORKS

The technology platform consists of low-cost, prepaid meters supported by sophisticated cloud-based software which are embedded in home solar systems. Customers make a small initial down payment for a high-quality solar PV system and then prepay for the energy service, topping up their systems in small, user-defined increments using a mobile phone. Simpa's pricing model, known as "Progressive Purchase™", however, has an important twist. Unlike standard pay-as-you-go models, Simpa's model enables users to pay off their systems progressively with each energy payment contributing to the final purchase price of the system. Once fully paid, the system unlocks permanently and delivers reliable energy free of charge. "It's simple: clean, reliable electricity, and pay-as-you-go convenience that leads to ownership", Mr. Needham explains.

The company recently successfully completed a pilot project with customers in rural Karnataka and Bangalore in India, a country in which some 400 million people lack access to the electricity grid. Simpa worked with its partner, the Solar Electric Light Company (SELCO) India to market and sell Simpa-enabled SELCO home solar systems. In the branches in which Simpa's payment model was used, sales of home solar systems increased between 30 and 168 percent.

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THE IMPORTANCE OF INTELLECTUAL PROPERTY

Intellectual property (IP) protection is key to the company's growth. "We protect our IP, because we believe that it is one of the ways to defend and grow our business", Mr. Needham explains. "A patent on our unique and proprietary IP also provides a foundation from which we can earn service and licensing revenue", he adds. Given the enormous demand for clean energy solutions, the company has sought to protect its technology internationally using WIPO's Patent Cooperation Treaty (PCT). "The PCT process has been very easy and straightforward. It has enabled us to rapidly pursue coverage in multiple markets and preserve the option to follow through with specific national offices at a later date", he explains.

Simpa earns revenue in two ways: first, by selling home solar systems to consumers on a pay-as-you-go basis; second, by selling or licensing its payment platform solution (Progressive Payment™) to microgrid operators and vendors of home solar systems and other energy-related solutions. The company sells the prepaid metering hardware and charges for ongoing revenue management services delivered through its software platform. The company is targeting emerging markets, such as India, where demand for energy is growing rapidly and where clean, distributed energy solutions are particularly advantageous. In light of the scale of energy poverty and growing demand for clean and reliable energy, the company is preparing to expand its operations. "We are considering new customer engagements in three or four Asian and African markets", Mr. Needham notes. The company is also in discussions with other potential clients who are looking to leverage and adapt Simpa's technology "to make other valuable solutions such as power storage and solar-powered irrigation pumps affordable for the mass market", he adds.

Mr. Needham is clearly upbeat about Simpa's plans for the future. "By 2015 Simpa will have helped nearly 5 million people gain access to clean, reliable electricity", he says. "That's a good start, but the need and market opportunity is vastly larger. Our work is just beginning." CJ ◆

Customers make a small initial down payment for a high-quality solar photovoltaic system and then prepay the energy service in small installments. Each energy payment contributes to the overall cost of the system. Once fully paid the system unlocks permanently and delivers clean and reliable energy free of charge.

A glimpse into the future of PARALYMPIC SPORTS

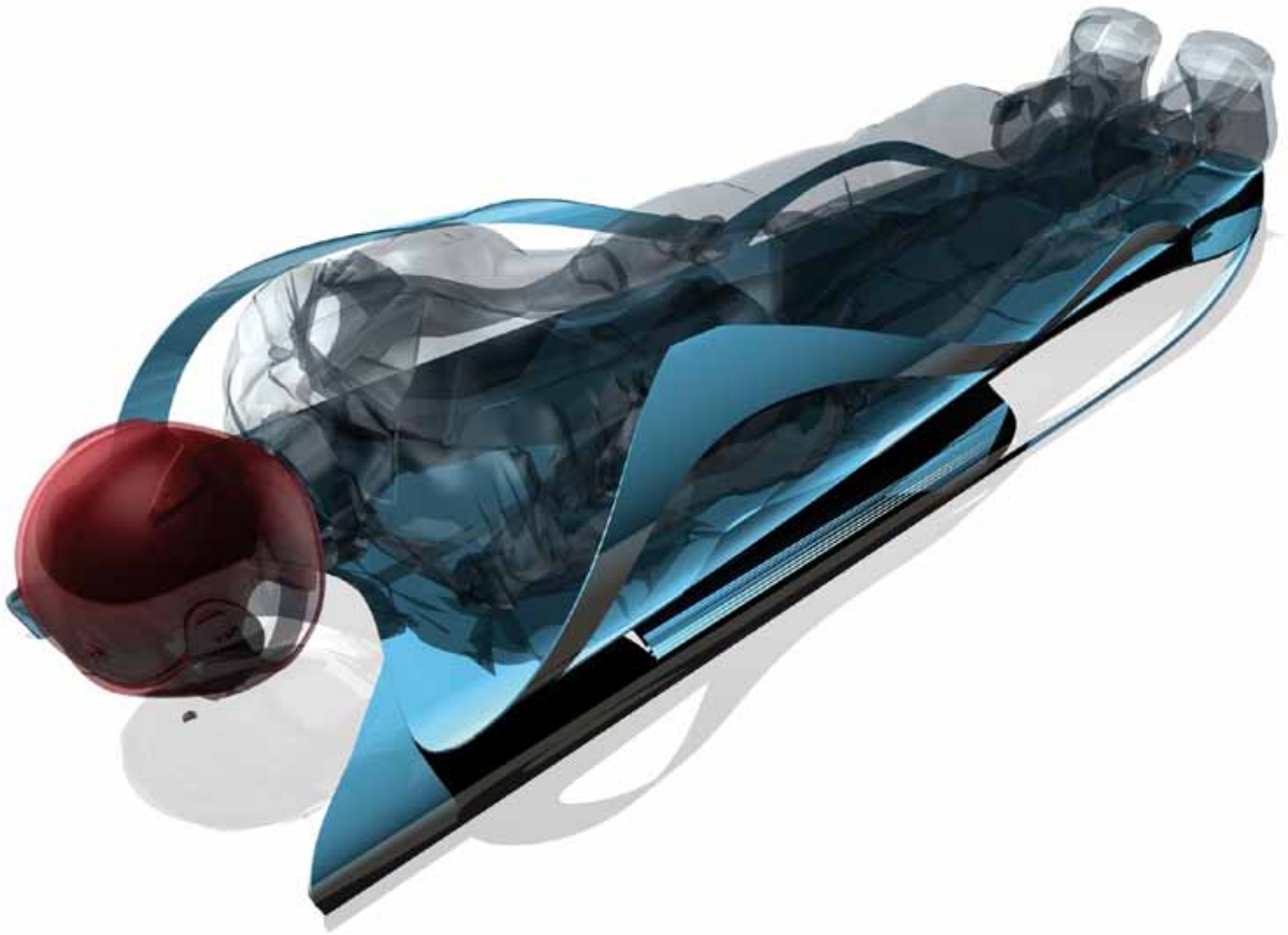

Photo: Igor Safronov, Javier Soto & rb-create 2012

Brainsled offers a way for individuals living with severe physical impairments to compete on equal terms with able-bodied competitors. The athlete steers the sled using brain impulses captured in a special headset.

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Photos: Igor Safronov, Javier Soto & rb-create 2012

Rainbow Touch uses textures based on dots and lines in variable sizes and thicknesses representing different colors to enable visually impaired athletes and fans to recognize the color of team stripes.

Ghost, the winning design, is a personal parathlete training device worn on the wrist and elbow. It uses sounds and vibrations to tell the wearer when they are performing a particular movement correctly.

Augestra is an augmented-reality device that enhances the spectator experience of paralympic sports such as Goal Ball making it possible for spectators to tap into the athletes' experience of the game.

Endura's strong, open structure offers maximum support and ventilation making it possible for athletes to train for longer and with greater comfort.

In the run-up to the London 2012 Paralympic Games, engineering and design students from Imperial College London and the Royal College of Art in London recently unveiled a selection of exciting prototypes that offer a glimpse of what the future of paralympic sports might look like. The devices were developed in the context of the Sports Innovation Challenge, funded by Rio Tinto, which is providing the precious metals for the 4,200 gold, silver and bronze medals awarded at the London 2012 Olympic and Paralympic Games, and with the support of Ottobock, a leading prosthetics manufacturer. Ottobock is the official prosthetic, orthotic and wheelchair technical service provider of the London 2012 Paralympic Games. The Challenge is part of a five-year program that seeks to harness the creativity of leading engineering and design students to make sports more accessible to those with disabilities and to offer students experience in managing real-life projects. WIPO Magazine takes a closer look at some of the potentially game-changing innovations the students came up with.

GHOST

In the world of elite sport, every fraction of a second counts. "A bad turn or an error in the kick may mean the difference between first and third place in a race", notes Donovan Tildesley, blind swimming bronze medalist.

Visually impaired swimmers face enormous challenges in correcting and refining the mechanics of their strokes for improved performance because they simply cannot see whether they are moving optimally. They rely on physical interaction and auditory feedback from their coaches to refine their movements. Ghost is a personal parathlete training device developed by Shruti Grover, Benedict Copping, Idrees Rassouli and Jason Cheah. Worn on the wrist and elbow, the device uses sounds and vibrations to tell the wearer when they are performing a particular movement correctly. The system also allows athletes to train using the movement data of the world's top Olympic athletes.

HAPTIC VISION

Students Chin-Wei Liao, Daniel McLaughlin and Igor Safronov came up with Haptic Vision, a chest strap device that promises to give blind or visually impaired athletes greater autonomy. Athletes are guided and kept on course during races using a series of vibrations – potentially eliminating the need for a sighted guide.

RAINBOW TOUCH

A number of devices to enhance the experience of visually impaired sports fans were also developed. These include Rainbow Touch, described as a "color-to-texture translation system" that enables athletes and fans to recognize the color of their team stripes. Rainbow touch "uses textures based on dots and lines in variable sizes and thicknesses, to represent color based on the continuous spectrum of visual light", the team (Mi Eun Kim, Martin Jaere and Noriyaki Maetani) explains. They are convinced that Rainbow Touch "can be the basis of a new universal color-to-texture translation language".

AUGESTRA

While many paralympic sports are fun to play, they are not necessarily the most exciting for spectators. Goal Ball, for example, involves blindfolded teams competing against each other to hit a ball into a goal at either end of the court. Spectators have to remain silent to enable players to locate the ball which has a bell inside. Yuta Sugawara, Tim Bouckley and Jenny Shih have come up with an augmented-reality device, Augestra, that lets spectators tap into what athletes experience in this game by connecting them with players, using sensors that wirelessly transmit the vital signs of players (heart beat and breathing) to audio devices worn by spectators. "Our aim has been to use technology to connect the audience to the athletes, to let spectators share in the experience of elite competition and be inspired and excited by paralympic sport as a whole", the team notes.

ENDURA

The prosthetic limb, Endura, developed by Millie Clive-Smith, Sebastiaan Wolzak and Seitaro Taniguchi, seeks to overcome the inconvenience and discomfort experienced during training by athletes who wear prostheses. Currently, athletes need to halt training sessions every 30 minutes or so to remove the prosthesis and drain accumulated sweat. The team has overcome this problem by developing a strong, open structure for maximum support and ventilation using Bone Algorithm Technology making an optimal fit possible. This enables efficient dissipation of heat and perspiration. Endura's design also enables athletes to adjust the tightness of the prosthesis to accommodate any muscle expansion arising from intense physical activity, making it a more comfortable fit than contemporary devices.

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REMOVING BARRIERS TO COMPETITION

Students also came up with a number of innovations that enable able-bodied and physically impaired athletes to compete side by side using the same equipment and following the same rules.

HEADSHOT

Headshot, for example, offers a new take on clay pigeon shooting. The device enables athletes to move, aim and fire a gun mechanism with their head and mouth. Competitors sit on a platform with their shotgun mounted in front of them. A specially designed headset tracks the movement of their head – as it moves right, left, up and down, the platform also moves – allowing them to take aim. The gun is fired by blowing into a mouthpiece on the headset. "Anyone with mobility from the neck up can potentially compete at the highest level. I think the most valuable aspect of this technology is that… disabled and able-bodied sports do not need to be separate and that we can introduce sports that allow a much broader section of the population to participate together", observed Colin McSwiggen who, along with Jeffrey Gough and Juhye Lee, developed the device to demonstrate how people living with quadriplegia could compete with able-bodied people in clay pigeon shooting.

BRAINSLED

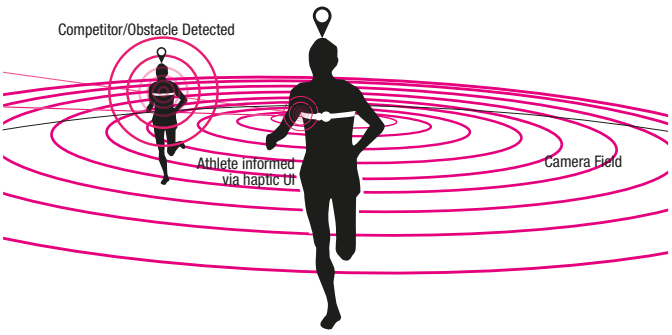
Brainsled also offers a way for individuals living with severe physical impairment to compete on equal terms with able-bodied competitors. The athlete steers the sled using brain impulses captured via a special headset. This innovation is a test of courage, concentration and skill. "Strength is not a key factor any more," the team notes. Even the most severely impaired individuals can "experience the adrenaline and physical excitement of an extreme activity", they said. Brainsled was conceptualized and designed by Michele Tiberio, Victor Monserrate, Javier Soto and Sangwoo Park.

TURNING INSIGHTS INTO DESIGN OPPORTUNITIES

In developing these novel innovations that promise to broaden participation in sport by athletes with physical impairment and boost athletic performance generally, the students worked closely with top parathletes, including Iain Dawson, Jimmy Goddard and Scott Moorhouse. This enabled the students and staff to gain key insights that were vital to ensuring that the devices developed matched the needs of the athletes. "Without the input of the user to validate the decisions made, there is a real danger of producing a solution that is completely inappropriate", notes Rolf Thomas, one of the design tutors.

"What we have done is try to engage students to develop devices that might help paralympic athletes to compete in the future", said Preston Chiaro, Group Executive, Technology and Innovation at Rio Tinto. "The competition has really gone beyond our original intention in the sense that students have been so creative; they thought not only of devices that can help paralympic athletes but that also get the audience more involved in the sport taking place before their eyes. It's really absolutely amazing", he added.

The challenge offered students an opportunity to "explore the design possibilities and develop functional and form prototypes using the inspiration of London 2012 to help the future of the Paralympic Games and the wider disabled community", noted Professor Peter Childs, Imperial College's Innovation Design Engineering Joint Course Director. "Creative leadership has been identified repeatedly by business surveys as a critical component to success", he said. "We wanted an exciting project area that encouraged generative activity. This is important in the development of designers, engineers and innovators who can think in a disruptive enough fashion to help form future product directions for industries", he added.



Inspired by vision impaired paratriathlete Iain Dawson, Haptic Vision offers visually impaired athletes more control and autonomy over their performance.

Headshot offers a new take on clay pigeon shooting. The device enables athletes to move, aim and fire a gun mechanism with their head and mouth.

Challenge students were also charged with proposing possible new sports for the Olympic Games in 2056. Cannonball is a fast and furious wheelchair team sport where severely disabled athletes control their chairs using an in-helmet accelerometer and bite controller.

Photos: Igor Safronov, Javier Soto & rb-create 2012

About the Paralympic Games

The Paralympic Games are the world's second largest sporting event. The London 2012 Games, to be held from August 30 to September 9, will bring together some 4,200 athletes from 150 nations participating in 20 different sports. The first organized athletic event for disabled athletes took place on the opening day of the 1948 Summer Olympic Games in London, when Dr. Ludwig Guttman of Stoke Mandeville Hospital hosted the 1948 International Wheelchair Games for war veterans with spinal cord injuries. His aim was to create an elite sporting event equivalent to the Olympic Games for people with disabilities. The first official Paralympic Games were held in Rome in 1960, attracting 400 athletes from 23 countries. The first Winter Paralympic Games were held in 1976 in Örnsköldsvik in Sweden.

About Imperial Innovations

Imperial Innovations was founded in 1986 as a wholly-owned subsidiary of Imperial College London. It was one of the first technology transfer offices to be established in Europe. Today, Imperial Innovations is a leading international technology commercialization company based in the UK and one of the most prolific investors in early-stage companies. Its integrated approach covers all aspects of the commercialization process. In 2005, the company signed a 15-year agreement with Imperial College to commercialize technology derived from its research.

Photo: Igor Safronov, Javier Soto & rb-create 2012

CHALLENGE WINNER

This year's Sports Innovation Challenge winner, the Ghost project, has now successfully secured additional funding and a mentor, Andy Brand, to take the project forward with the support of Imperial Innovations. Many of the other students are also working on further developing a number of other promising innovations, such as Rainbow Touch, Augestra and Haptic Vision.

CHANGING PERCEPTIONS

The inspiring achievements of modern-day record-breaking parathletes are changing perceptions about disability. As noted by Aimee Mullins – athlete, actress, fashion model and double amputee – disability "is no longer a conversation about overcoming deficiency. It's a conversation about augmentation. It's a conversation about potential." While technological innovation cannot take the credit for the phenomenal sporting achievements of elite paralympians, it undoubtedly plays a key role in translating the dreams of many into reality. It also carries the promise of making sport more accessible to all people living with physical impairment. The Sports Innovation Challenge offers a tiny glimpse of the rich possibilities for the evolution of sport in the coming years. It will undoubtedly be an interesting and exciting journey. CJ ◆

Paratriathlete Jimmy Goddard and javelin thrower Scott Moorhouse at Imperial College London for the athlete workshops.

The evolving DOMAIN NAME LANDSCAPE

*By **Brian Beckham**, WIPO Arbitration & Mediation Center*

The Internet's Domain Name System (DNS) is set to undergo the largest expansion in its history. In June 2011, the Board of the Internet Corporation for Assigned Names and Numbers (ICANN), which oversees the architecture of the DNS, decided to open up the generic top level domain (gTLD) name space to allow private entities and organizations to acquire their own "*dot. anything*" online space (see WIPO Magazine 6/2011: *Navigating an Expanded Domain Name Landscape*). On June 13, 2012, ICANN revealed that it has received some 1,930 applications for new gTLDs from applicants in 60 countries and territories. Some 66 of these applications relate to geographical names, and 166 of them concern Internationalized Domain Names (IDNs) for strings in scripts such as Arabic, Chinese and Cyrillic, reflecting the increasing internationalization of the Internet. Further revealing the growing reach of the Internet, applicants from the Asia-Pacific region submitted 303 applications, while applicants from Latin America and Africa filed 23 and 17 applications, respectively.

Some new gTLDs have been applied for by more than one applicant. Over 1,400 new gTLD strings, however, involve applications from a single applicant. The full list of new gTLD applications is available at: *http://newgtlds.icann.org/en/program-status/application-results/strings*.

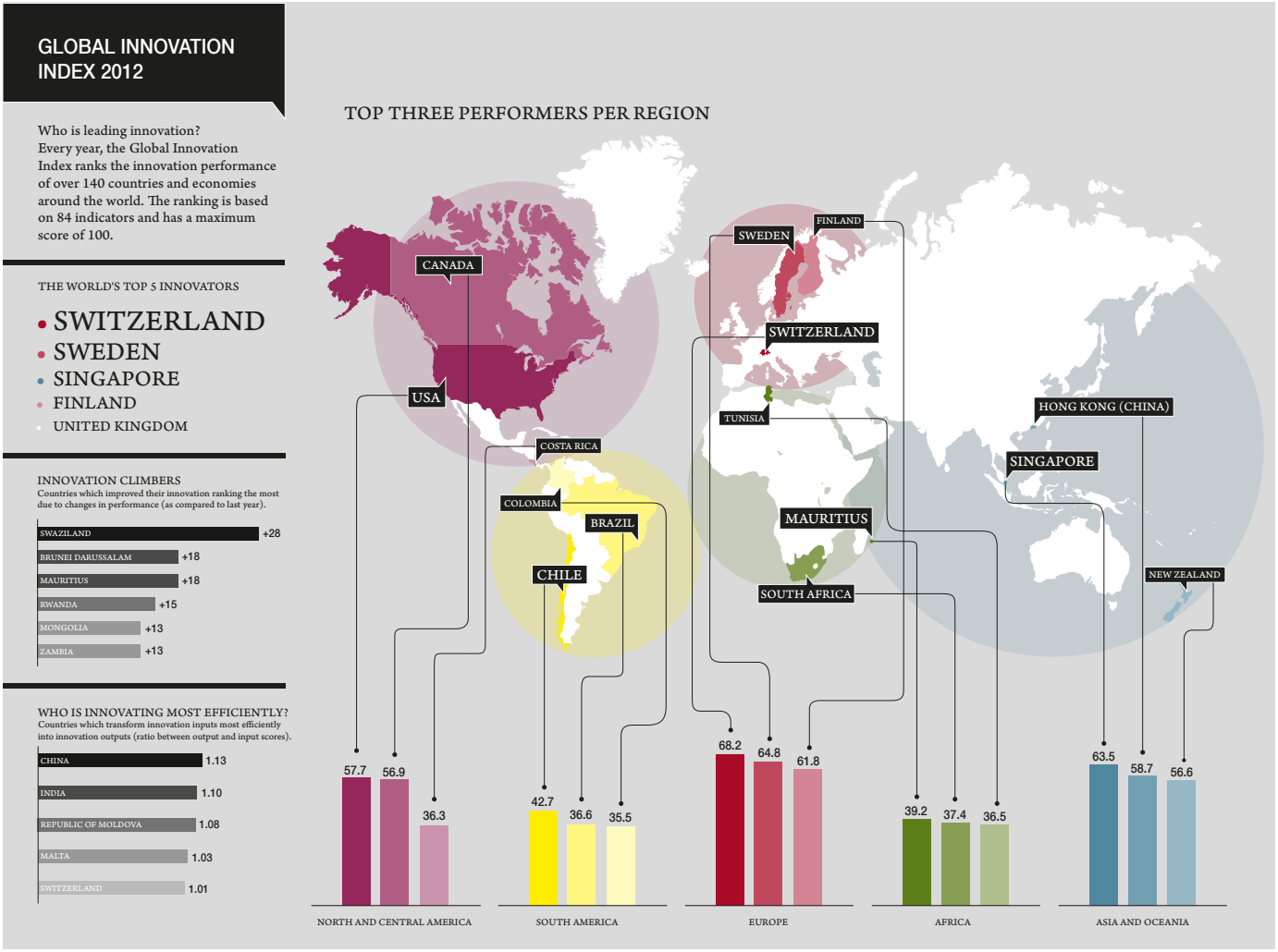
ICANN hailed the event as a "historic day for the Internet and for the 2 billion people around the world that depend on it." While brand owners have participated in ICANN's application process (accounting for some 664 "*.brand*" applications), many remain concerned about the increased potential for online abuse. HSBC's Martin Sutton, Manager, Group Fraud Risk & Intelligence, observes that "while HSBC's overall plans to apply for its own new gTLD weighed the opportunity to apply for a '*.brand*' space as a means to point consumers to a trusted and secure online location, the sheer volume of potential new gTLDs with varying registration business models is creating massive new challenges in online brand management."

The applications are open for public comment during a 60-day period which began on June 13, 2012, during which ICANN will submit these comments to independent evaluation panels. For approximately seven months, also as of June 13, parties may file a formal objection to an application they believe will infringe their rights. Objections may be filed on four grounds, as termed by ICANN: string confusion, limited public interest, community, and legal rights (i.e., trademarks and names and acronyms of intergovernmental organizations (IGOs)).

The latter category of disputes will be administered by the WIPO Arbitration and Mediation Center under a Legal Rights Objections (LRO) procedure established in collaboration with ICANN. The WIPO Center is the global leader in domain name dispute resolution services (*www.wipo.int/amc/en/domains/*). LRO cases will be filed electronically and are intended to be resolved based on the pleadings, with an independent panel making a determination in the form of a recommendation to ICANN. In some instances, parties may seek instead to settle cases under the WIPO Mediation Rules. The WIPO Center provides information on the LRO procedure, in the form of FAQs, at: *www.wipo.int/amc/en/domains/lro/*.

Upon successful completion of ICANN's full evaluation process – including the possibility for governments to submit their observations directly to applicants or ICANN – applicants will sign a contract with ICANN to operate their own piece of Internet real estate. WIPO and others have consistently cautioned that any rollout of new gTLDs must be carefully managed. Only time will tell what the impact of ICANN's introduction of over 1,000 new gTLDs will be on brand owners and the Internet-using public. ◆

GLOBAL INNOVATION INDEX 2012



Steering the global economy out of crisis towards growth and prosperity is a top priority for policymakers across the world. This involves finding the right policy mix to ensure sustainable public finances on the one hand and economic growth and employment on the other. Innovation is a crucial element in this mix and key to generating sustained economic growth. But what factors determine a country's capacity to innovate? What elements need to be in place to enable a country or a company to transform ideas into commercially successful goods and services for economic and social development? Policymakers need tools to benchmark performance and refine and improve their policy choices. The Global Innovation Index (GII) offers a means of assessing innovation, evaluating related policy performance and refining innovation policies for optimal growth.

In early July 2012, WIPO along with leading business school INSEAD, published *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth*. The GII, prepared in conjunction with knowledge partners Alcatel-Lucent, Booz & Co., and the Confederation of Indian Industry (CII), reports on the innovation capabilities and performance of 141 economies. WIPO Magazine takes a closer look at its findings.

ABOUT THE GII

The GII measures the degree to which countries and businesses integrate innovation into their political, business and social spheres. The GII "contains a number of metrics which help us to provide a continual assessment of innovation and policy performance in relation to innovation," explained WIPO Director General Francis Gurry. "Intellectual property encourages investment in innovation and encourages those who innovate to be able to have a framework in which to trade their intellectual assets and the fruits of their innovation," he noted.

In highlighting good practices, the GII helps guide innovation policy development. It captures performance in two key areas: first, the capability of an economy to innovate (on the basis of five input pillars relating to institutions, human capital and research, infrastructure, market sophistication and business sophistication); and second, an economy's innovation performance in terms of the outputs generated (on the basis of two output pillars, knowledge and technology outputs and creative outputs).

The GII moves beyond classical indicators of science and technology and seeks to cover broader aspects of innovation. "The 2012 variables were broadened in an effort to find the right mix to capture innovation as it happens today," noted Soumitra Dutta, Roland Berger Chaired Professor in Business and Technology at INSEAD and GII's founder. This year's index features two new sub-pillars: ecological sustainability and online creativity. "The GII seeks to update and improve the way innovation is

PERSPECTIVES ON INNOVATION

"In innovation, people are a thousand times more valuable than systems or money."

Werner Bauer, Chief Technology Officer, Nestlé

"Innovation is essential for the developed and developing world equally to achieve their potential; however, the ways and tools to nurture innovation, promote it and make use of it are different."

Mohammed Al-Suwaiyel, President, King Abdullah City of Science & Technology (KACST)

"Innovation is too important as an economic and social phenomenon to be over-politicized."

Francis Gurry, Director General, WIPO

"Innovation is a state of mind. You have to have a mindset of innovation in your company, in your country, in your environment if you want something to happen. Diversity, collaboration and openness are part of this mindset."

Bruno Lanvin, Executive Director, eLab, INSEAD

"Innovation is essential for the development of companies, society, for humanity at large."

Per-Ola Karlsson, Senior Partner, Managing Director Europe, Booz & Co.

"Innovation is about thinking about a new way to create value, to create prosperity for the people around you. Innovation is a fuel for the economy."

Ben Verwaayen, CEO, Alcatel-Lucent

→

measured. Today's definitions must capture an environment that is context-driven, problem-focused and interdisciplinary," he said. The GII is "about improving the journey to better measuring and understanding innovation and identifying targeted policies, good practices and other levers to foster innovation," he explained.

STRENGTHENING LINKAGES IN THE INNOVATION ECOSYSTEM

The GII 2012 stresses the crucial importance of building strong linkages among all elements operating in innovation ecosystems. Countries that top the innovation index have improved linkages among innovation actors, most notably in science and higher education and in the public, private and not-for-profit sectors. "You see remarkable consistency among the countries that come in the top 15," observed Professor Dutta. "The whole ecosystem connecting the different innovation actors functions more seamlessly and more efficiently in these economies." While many resource-rich economies have invested significantly in human capital in recent years, innovation gains have not been forthcoming because of poor coordination across sectors.

"Developed economies must continue to strengthen and develop linkages among stakeholders in the innovation landscape to stay ahead of strategic sectors," said Per-Ola Karlsson, Senior Partner, Managing Director of Europe, Booz & Co. "Similarly, developing economies must institute a national model that establishes coherent linkages in their innovation systems. By aligning cross-cutting policies and coordinating the efforts of all stakeholders, these coherent linkages drive the innovation process," he said. "New linkages between stakeholders are what turn ideas into successful outputs."

KEY FINDINGS

A NEW INNOVATION DYNAMIC EMERGES

High-income economies dominate the rankings and have a significant lead in terms of innovation capability and outputs. In spite of deep and persistent innovation divides across countries and between regions, the report points to the emergence of a new innovation dynamic with a number of middle and lower-income economies pushing innovation frontiers. China, for example, ranked fifth on technology and knowledge outputs. India, also a low-income economy, ranks tenth on creative intangibles and is performing well in terms of creating innovative business models.

TOP PERFORMERS

For the second consecutive year, Switzerland, Sweden and Singapore topped the GII rankings, followed by Finland, the UK, the Netherlands, Denmark, Hong Kong (China), Ireland, and the US. These "innovation leaders" have succeeded in creating innovation ecosystems that support human capital and stable innovation infrastructures.

Other so-called "innovation learners" (countries in which levels of innovation are rising as a result of notable but fragmented improvements in institutional frameworks and innovation infrastructure; a skilled labor force; and a more sophisticated business community) are also identified. These include – among middle-income countries – Latvia, Malaysia, China, Montenegro, Serbia, the Republic of Moldova, Jordan, Ukraine, India, Mongolia, Armenia, Georgia, Namibia, Viet Nam, Swaziland, Paraguay, Ghana and Senegal. Among low-income countries, Kenya and Zimbabwe stand out.

A third category features countries with income levels that point to a high innovation potential but where the performance of innovation systems is below that expected given levels of GDP per capita (in purchasing power parity in international dollars (PPP$)). Most resource-rich economies fall into this category, which includes a mix of high-income economies (such as Qatar, the United Arab Emirates, Oman, Brunei Darussalam, Kuwait, Greece and Trinidad & Tobago) and middle-income economies (such as Argentina, Belarus, Mexico, Botswana, Panama, the Islamic Republic of Iran, Gabon, the Bolivarian Republic of Venezuela, Algeria, the Syrian Arab Republic, Angola, Lao PDR, Yemen and Sudan).

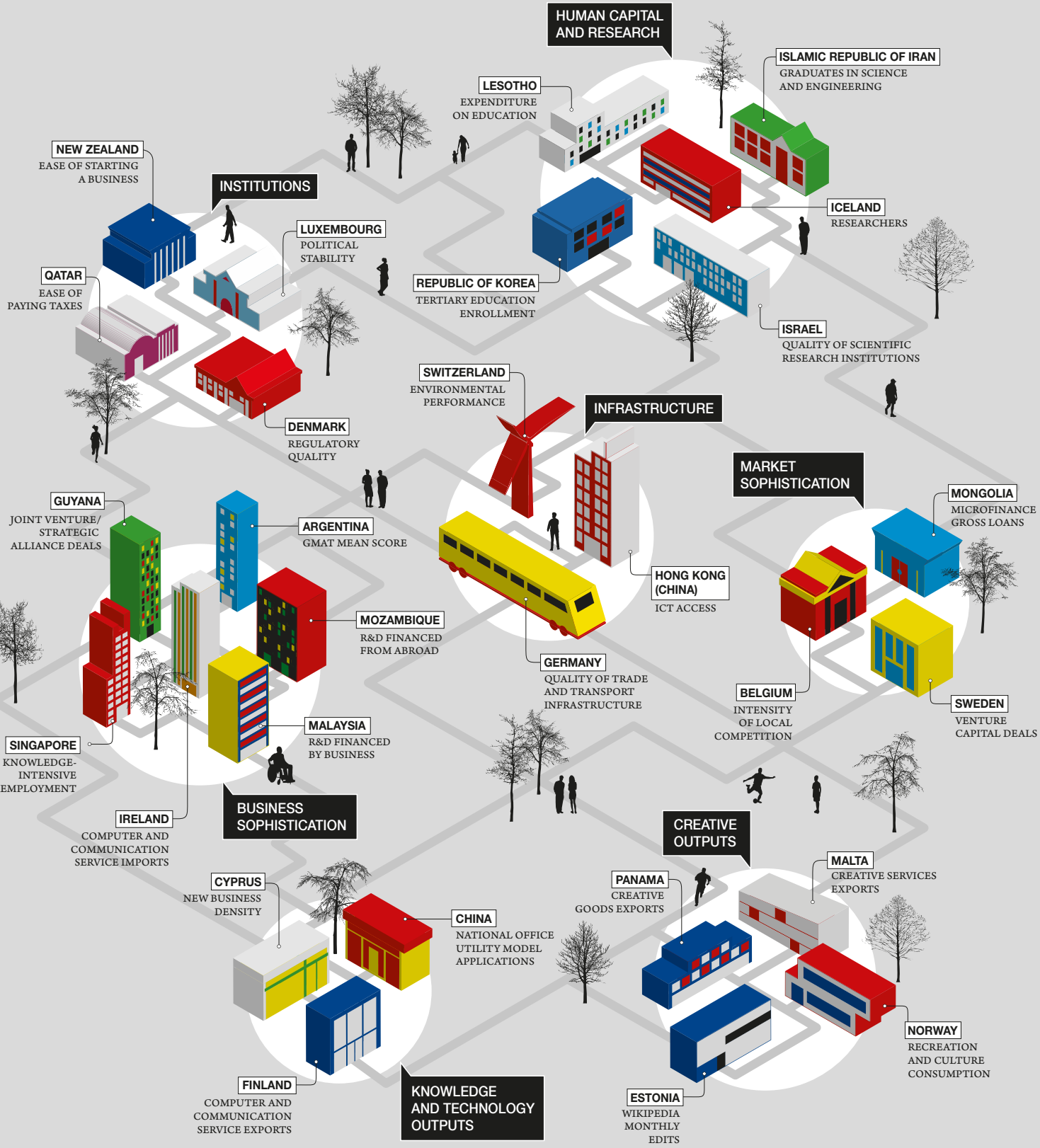
The GII also shows how efficiently an economy transforms its input capability into innovation outputs. The Innovation Efficiency Ratio shows countries which display a strong capacity for innovation despite a less supportive environment. The top 10 rankings include a mix of high and lower-income countries: China, India, the Republic of Moldova, Malta, Switzerland, Paraguay, Serbia, Estonia, the Netherlands and Sri Lanka.

For Africa, Mr. Gurry said the main challenge is to achieve "long-term building of capacity to innovate and… to add value to the resource base that exists. Adding that value is going to come through innovation."

"Every country can aspire to be an innovation-driven economy," said Chandrajit Banerjee, Director General of the CII. "The more resource-constrained an economy is, the more prone to

IN A PERFECT WORLD FOR INNOVATION, WHO WOULD DO WHAT?

Top ranking countries/economies for selected indicators from the Global Innovation Index 2012



innovation it actually can be. Importantly, innovation is about acts that improve everyday lives and a journey towards faster, sustainable, inclusive growth," he said.

CONTINUED INVESTMENT IN INNOVATION IS ESSENTIAL

The report underlines the fact that continued investment in innovation is crucial to securing sustainable growth and prosperity. It is "a timely reminder that policies to promote innovation are critical to the debate on spurring sustainable economic growth," said Mr. Gurry.

The data point to a slowdown in the rate of research and development (R&D) investment in some economies. "The downward pressure on investment in innovation exerted by the current crisis must be resisted. Otherwise we risk durable damage to countries' productive capacities," cautioned Mr. Gurry. "This is a time for forward-looking policies to lay the foundations for future prosperity," he added.

If rates of investment in innovation slow down, noted Professor Dutta, "it is often not easy to pull back and recreate the same kind of momentum once the current crisis becomes less accentuated." He said continued investment in innovation was key to emerging from the crisis on a stronger, more competitive footing.

Nonetheless, a number of countries, including Hungary, Ireland, Poland, the Republic of Korea, Slovakia and Turkey, have increased business R&D spending in recent years.

MULTISPEED EUROPE

Data show the emergence of a multispeed Europe and a growing disparity in innovation performance within the region. The landscape includes innovation leaders in northern and western Europe; some innovation learners in the rest of Europe, for example, Malta, the Baltic countries, the Republic of Moldova, and Ukraine, which are climbing up the ranks; with an innovation lag among most southern and eastern European economies. "Europe can do more to drive its innovation agenda, especially in competitiveness, or it risks falling behind the rest of the world," noted Mr. Karlsson.

PRESSURE POINTS EMERGE IN NORTH AMERICA

In North America there are signs of weakness. While the US continues to be an innovation leader, the report reveals relative shortfalls in education, human resources and innovation outputs. Canada showed weakening positions in all the main GII innovation indicators. Professor Dutta urged these economies to invest in a number of key areas to further improve their innovation capacity and sustain performance.

BRIC ECONOMIES MUST RENEW INNOVATION DRIVERS

The BRIC economies (Brazil, the Russian Federation, India and China) share a range of governance and institutional challenges and need to continue to invest in and strengthen their innovation capabilities to fulfill their potential and drive global economic growth. The Russian Federation advanced in the rankings this year while Brazil, China and India dropped, with Brazil experiencing the largest fall. However, China and India demonstrate a strong ability to translate pockets of excellence into valuable innovation outputs. China's performance on key knowledge and technology outputs is outpaced only by Switzerland, Sweden, Singapore and Finland.

THE KEY IMPORTANCE OF INNOVATION

While there is broad agreement about the critical importance of innovation, our understanding of what it takes to improve innovation capabilities and performance and how to measure these variables remains limited. The insights generated by GII's evolving methodology will undoubtedly help all actors in the innovation ecosystem to tackle and overcome the many future challenges associated with enabling innovation. "An index showing where to go and for what reason is a very valuable tool," says Ben Verwaayen, CEO of Alcatel-Lucent. While there is no quick fix, with the right mindset, tools and knowledge, innovation is possible. As noted by Karim Sabbagh, senior partner at Booz & Co., "innovation is not the monopoly of any specific region, country, company or individual; it's open to everyone." CJ ◆

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For more information contact WIPO at
www.wipo.int

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

Telephone:
+4122 338 91 11

Fax:
+4122 733 54 28

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For comments or questions, contact The Editor at WipoMagazine@wipo.int

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