TRANS forum

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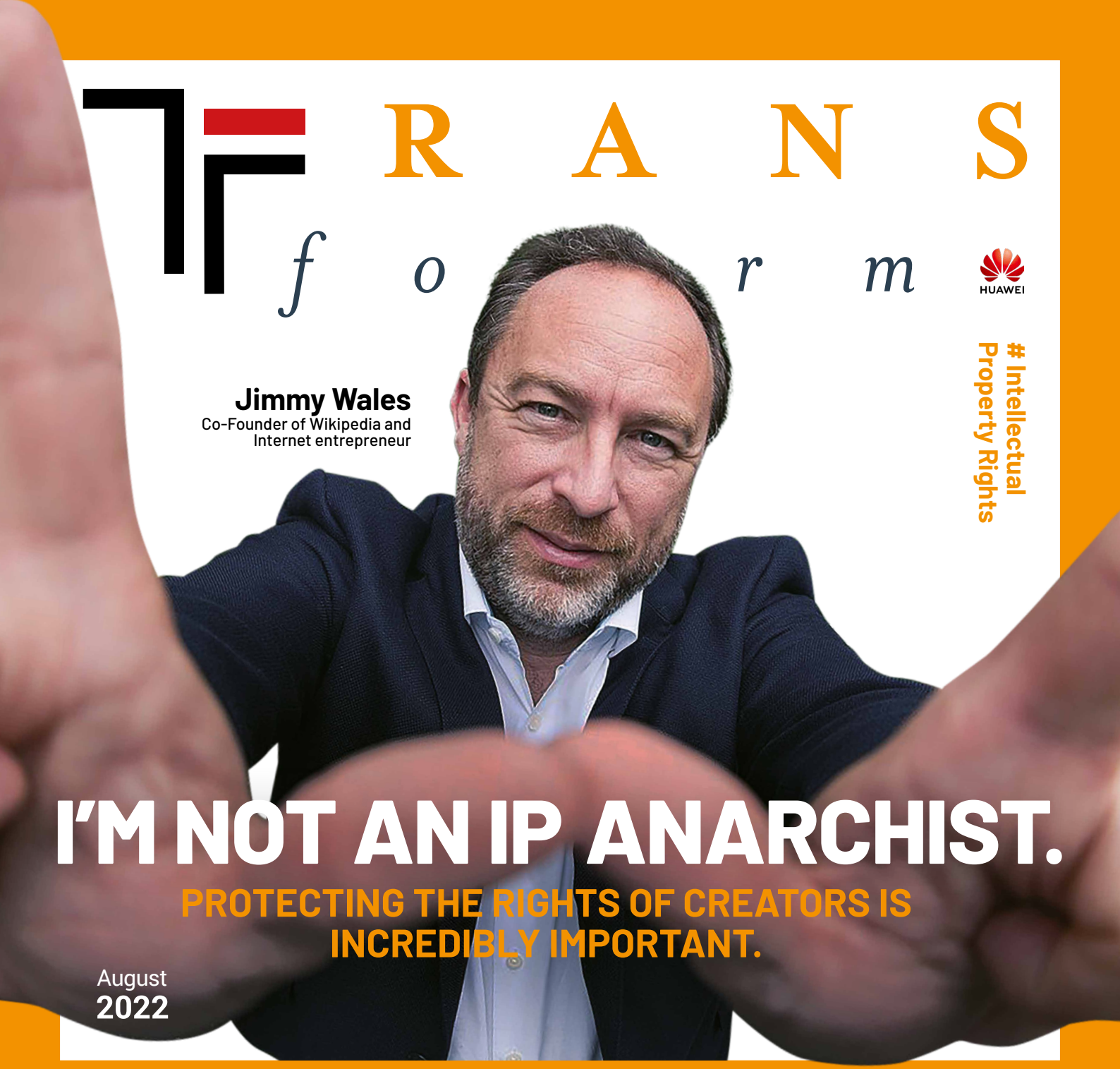
Intellectual Property Rights



Jimmy Wales
Co-Founder of Wikipedia and Internet entrepreneur

I'M NOT AN IP ANARCHIST.

PROTECTING THE RIGHTS OF CREATORS IS INCREDIBLY IMPORTANT.

August
2022

IN THIS ISSUE, WE LOOK AT THE SUBJECT OF

INTELLECTUAL PROPERTY RIGHTS

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EDITOR'S NOTE

HEY WORLD LEADER, GIVE ME A CALL! WE NEED TO TALK ABOUT IP...

Gavin Allen
Editor-in-Chief
Huawei Technologies

Gavin.allen@huawei.com
@68tractorboy

So here's a challenge: how to start an article on Intellectual Property Rights, that doesn't prompt everyone to click away within a split second? It's an important, but seemingly remote-for-many and technical subject.

But everyone loves a punchy quotation, right?

"Necessity is the mother of all invention"? (Plato, since you're wondering - thank you Google). But that doesn't quite cut it.

"Genius is 1% inspiration and 99% perspiration"? Better – and Thomas Edison was certainly well placed to know, his genius having churned out countless inventions. But all a bit familiar. And, well, dated.

So I've plumped instead for the founder of Wikipedia Jimmy Wales – and a more modern-day warning about how intellectual property rights (IPR) are being skewed.

"Politicians are hoping to rein in the power of the internet giants but they do things that end up entrenching their power... We as a global society aren't really stepping back and thinking through this in a balanced way."

Who's cop, who's robber?

Jimmy, who denies being an "IP anarchist, against all the rules" is the main interviewee in this month's edition of *Transform*, Huawei's global thought leadership magazine. And he's worried. Worried that the IP laws aren't entirely fit for modern times, that "grandstanding against foreigners" is fracturing access to global knowledge and that the best interests of the people are being ignored.

And he tells me we don't even always know who the good guys are any more.

"I like the analogy of cops and robbers – legitimate copyright enforcers against piracy. But we can also flip that on its head. Maybe the cops are the robbers if it's the music industry trying to control everything out of an interest that's not really about protecting artists. "

Multiple questions, no easy solutions

The pandemic highlighted the public's sometimes contrary view towards IP - a universal demand for accelerated pharmaceutical innovation and never mind the cost but cheaper more accessible vaccines as a result. Rewarding both ideas and the blood, sweat and tears is a complex challenge: Jimmy recognises there's no easy one-size-fits-all solution.

"Protecting the rights of creators is incredibly important. But, that's only a start," he says. "What of the extent of property rights and intellectual property? How long should they go for? When should they be limited? What about fair use? All these kinds of issues are also very very important."

An array of challenges I put to another guest for this month's *Transform*, the former Director General of the World Intellectual Property Organization Francis Gurry.

Beware of balkanization

Mr. Gurry echoed Jimmy Wales' concerns about the "difficult and dangerous" breakdown of cross-border collaboration, warning that it puts at risk the social benefits that innovation brings to so many.

"I think we need to really be careful that we don't destroy the basis of what should be the next stage of evolution of the world in terms of cooperation," he said. "If we're going to deglobalize, have splinternets and see a balkanization of the world, then that's a complete failure."

Mr Gurry ran WIPO for 12 years and said a "new layer" was now required to ensure the IP system kept pace with technological change, pointing to questions around data as the thorniest challenge.

"Data was once a human right, an absolute right and now it's becoming a competitive issue. For me, data is the one issue that is going to require a lot of sorting."

Harry Potter Meets *Mission Impossible*
Also in this edition:

- **The author and academic Prof. Christian Stadler explains where cool new ideas come from and how you turn them into a business**
- **We explore why companies waste trillions of dollars every year leaving patented ideas gathering dust on corporate shelves**
- **A former senior diplomat calls for an IPR move away from prioritising protection towards encouraging sharing for universal benefit**
- **A serial American entrepreneur turns poet to reveal why "Hermione Granger is the true archetype of the creator, innovator, and inventor."**
- **And a research engineer and innovation award-winner tells us how she may have cracked the 5G network's equivalent of *Mission Impossible***

So your mission, should you choose to accept it, is to read on and find out more. Don't worry: nothing's going to self-destruct...

I'M NOT AN IP ANARCHIST.

PATENTS INCENTIVIZE R&D AND HELP MAKE KNOWLEDGE PUBLIC.

Jimmy Wales
Co-Founder of Wikipedia and Internet entrepreneur

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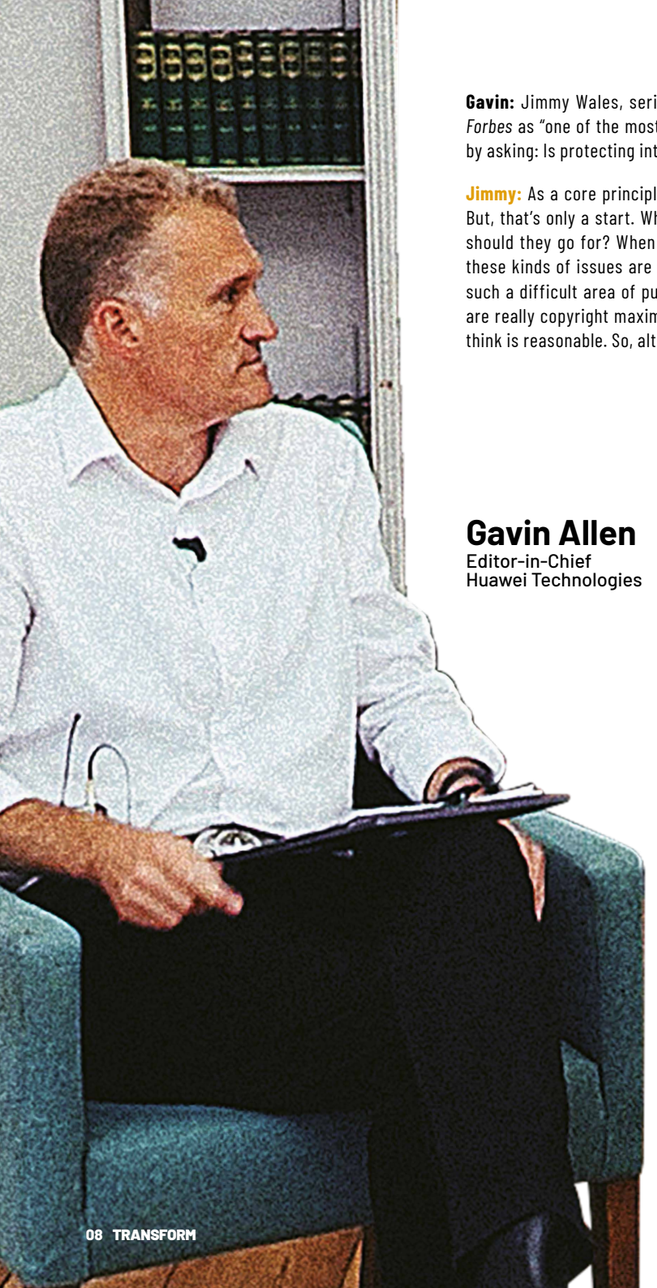


Gavin: Jimmy Wales, serial internet entrepreneur and founder of Wikipedia, was described by *Forbes* as "one of the most impactful humans alive." Jimmy, thanks for joining us. Can I just start by asking: Is protecting intellectual property key to protecting innovation?

Jimmy: As a core principle, the idea of protecting the rights of creators is incredibly important. But, that's only a start. What of the extent of property rights and intellectual property? How long should they go for? When should they be limited? What about quoting? What about fair use? All these kinds of issues are also very, very important. So, I think one of the things that makes this such a difficult area of public policy is that we do have a copyright lobby—you might call it—who are really copyright maximalists, who really want to overstep far beyond what most people would think is reasonable. So, although it's important, we have to think about what the limits are as well.

Gavin Allen
Editor-in-Chief
Huawei Technologies

> ***"We have a lobby of copyright maximalists."***

> ***"Protecting the rights of creators is incredibly important."***

Gavin: So, do you think that are we trying to squeeze a lot of modern technological developments into an old system, that is not quite robust or ready enough for modernity?

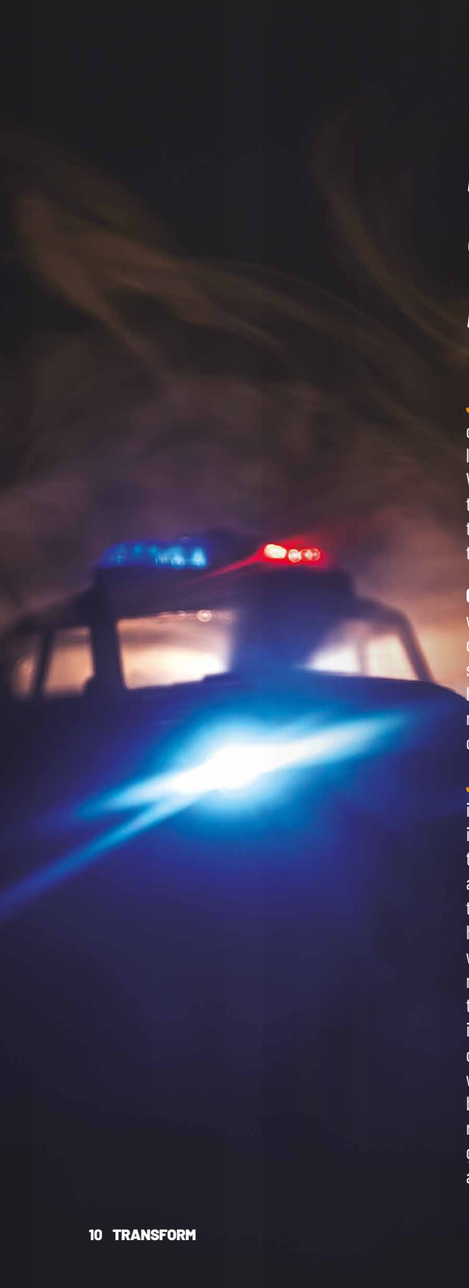
Jimmy: I definitely think so. There are a lot of ways to look at that and think about that. If you are at your kid's birthday party, you shoot a little video on your phone, and there is some music in the background, and you post that little clip on YouTube for example, not intending for it to become famous or viral, you just want to put it somewhere so you can send the link to grandma. Well, there is a very good chance that YouTube would automatically detect that background track and silence the audio. But it's not what most people think of as inappropriate use of copyrighted materials. You are not trying to pirate it. You are not trying to make money off the music.

Gavin: It's incidental.

Jimmy: It's incidental. But we are in sort of an environment where that kind of stuff does happen over time in a way that most people say that's kind of fair use, like you know, I pay for Spotify, or the radio stations pay for the rights to the song, and it's out in the world, and we are using it, and I took a video of my kids, and you know, I am not a pirate. When writing the copyright laws, nobody thought about [that sort of IP use]. Now suddenly because the technology's moved into the cloud, the copyright owners are trying to be a little more aggressive in a way that probably doesn't make sense.

Gavin: Is this system always trying to play catch-up? It's kind of like cops and robbers as it were. One is always trying to keep one ahead of the other.

Jimmy Wales
Co-Founder of Wikipedia and
Internet entrepreneur



> **Maybe the cops are the robbers.**

Jimmy: Yeah, definitely, and I like the analogy of cops and robbers. We can think about sort of legitimate copyright enforcement against piracy. We can also kind of flip that on its head. Maybe the cops are the robbers if it's the music industry trying to control everything out of an interest that's not really about protecting artists.

Gavin: It's interesting you say that. There was a recent Huawei IP forum where a quite distinguished former diplomat said that the IP system was invented to ensure "the ones who have keep what they have, and stop others reaching the same level." Do you think he's right, or again is it a balance?

Jimmy: You know, it's a balance. And it's really interesting because sometimes you hear people in the music industry, record company people, talking in very sort of high moral ground terms about protecting the rights of artists. And you think, actually, your industry has quite a long history of screwing over artists, right? So, maybe we should think a little harder about what that means. So, for example, one of the important things to think about with copyright protection is actually, it is that artist. So, it's that new, creative person who's creating, let's say music work, or it could be art, it could be text, it could be anything. If they are able to enforce their rights, and they are able to make sure they are getting paid appropriately for their work, that's a good thing. Actually, it isn't about protecting the vested interests. It's about protecting that small artist. Too often though, the small artist gets kind of lost in the shuffle. And indeed, a lot of artists these days do take quite reasonable and quite flexible views of copyright. You know, would you rat¬her your music be incredibly highly protected so no one can share it, and you sell 300 copies of an album, or would you rather your song go viral and be listened to for free by hundreds of millions of people all around the world? That's launching an amazing career. So, I think a lot of artists are now saying, "Actually, I want my stuff out there. Of course, I also want to get paid somehow." But that business model is very complicated these days.

Gavin: That does seem to be the core balancing act - how much you want to hold it tight, and how much you want it to be out there so people know who you are, whatever the field of expertise.

Jimmy: Absolutely.

Gavin: But there is also this question with patents, that you need to have them to incentivize people to innovate. And yet, there doesn't seem to be any actual link between the amount of effort that goes into a patent and granting it. Instead it's all about the originality and non-obviousness of it. Should we reflect more the sunk costs, the R&D that goes in when we're considering whether awarding a patent or not?

Jimmy: Yeah, I think so, but I think it's really complicated with patents in particular. There's this quite wonderful vision of the genius inventor who comes up and thinks of a great idea, and is able to get a patent to protect it. And then they have a legal right. So, then the big company can't just steal the idea immediately. But we know that doesn't always work so well. You know, the intermittent windshield wipers story: the guy [who invented them] fought in the courts for years and years, and finally won. But it was a long time. The system didn't

> **There should be a requirement, maybe every 14 years, to pay to renew your copyright.**

really function as you might hope, or might expect. And I am thinking about the big pharma type of question. This pill costs 12 cents to manufacture, and they sell it for 20 dollars. This is outrageous and unfair, but just hold on, that's how much it costs to manufacture each additional pill. They also spent 3 billion on a million field experiments and projects to try to find that compound that can save lives. It's not so easy to just go, "oh, now we just take the patent away and do it now." That doesn't mean we should never do that. I think there is a really interesting set of questions around Covid vaccines for example, where we are actually facing a global health emergency. We might say, "Look, in normal times, we might not do it this way, but we actually have an actual emergency." So, you know, it's complicated. But in general, I think the idea that patents do have an impact on the incentive structure for research and development is actually completely valid.

Gavin: You hinted earlier at this, but do you think there should be more of a time limit on some of these copyrights or patents? That effectively they're monopolies and protected for too long?

Jimmy: Yeah, definitely. In the early years in the US, and I think it's fairly universal, it was 14 years copyright, and could be extended to 28. Then, that got extended. Now, it can be incredibly long. Maybe that's ok for certain works – for example, Disney wanting to protect some of its very early copyrighted materials – but I can't see how extending protection incentivizes creativity today. We have a project called Wikibooks, an effort to create free textbooks. Let's say you take an algebra textbook that was first published in 1980, and it's been out of print for a great number of years. An algebra text is not like a Mickey Mouse cartoon; why not remove make it available free, to students who need it? There should be a requirement, maybe every 14 years, to pay to renew your copyright. Not an exorbitant price, but just something. Just so you put your hand up and go "Yeah, I am still here, I still want this." There is a lot of room for a fairly detailed look at how to improve some of the barriers that we see.

Gavin: When you think about licensing IP, what are the main principles to follow?

Jimmy: It's got to be a reasonable price. So that you are not blocking creativity with some minor patent on a pinch point, where an explosion of creativity could come beyond that point if only you don't try to monopolize everything yourself.

Gavin: Wikipedia is one of the most widely use knowledge-sharing platforms. What's your vision for it and why do you think sharing knowledge is important?

Jimmy: My vision for Wikipedia is to create a free high-quality encyclopedia for everyone on the planet in their own language. Knowledge sharing is important because the best way to improve to state of the world is for more people to have solid fact-based information.

Gavin: Companies typically keep a lot of their technologies secret, particularly for product manufacturers like Huawei. Do you think being more open would help the technologies evolve faster? Why?

Jimmy: Sometimes it would, but the balance between being open to reap the benefits of openness and incentivizing new research and knowledge creation is a rich question. For general knowledge, sharing is best.

Gavin: At a recent event, Huawei's IP head said most of the company's patents are filed for sharing, instead of blocking. But sharing for a return, so that it makes business sense and our inventors can continue innovating. What's your view of that?

Jimmy: I think that's basically right. Patents are a technique for making knowledge public rather than keeping them as trade secrets.

Gavin: To this whole question about sharing: is it almost a moral responsibility in certain areas? Again, not one-size-fits-all, but to come up with a brilliant idea and allow others to use it.

Jimmy: Yeah, so I believe Nike was taking the lead on this, in terms of sharing certain patents they had on manufacturing processes that were much better for the environment. And they decided with another group of their competitors to say actually we should all pull these certain patents together, and basically release them all, because we shouldn't be using these as competitive advantages over each other, we should basically all get the benefit for the whole industry of reducing our pollution footprint. I think there are cases like that where it's sort of obvious. That's basically the right thing to do. Because the patent is not about something that actually impacts consumers directly. It's not a new design for a shoe closure that might sweep the market, and be like this is genius, you know, and actually very helpful. It's just like, ok, we'd reduce our carbon footprint by 7%. Basically, everybody should do that.

Gavin: Should there be a tighter "use it or lose it" element as well to some of these things, whether it's an idea or innovation? Your example of the algebra book - unless you've commercialized it, or it remains commercial, the patent should just expire?

Jimmy: Yeah, I think that's become harder in one sense though. We've talked about the idea of copyrights that aren't being used. So, something's been out of print for a long time. It's not commercially available. And so, should people be able to go, look, this gives you the right to have exclusive commercial use, but you are not using it, so therefore we are going to do it? And the problem these days is that print on-demand kind of erases the distinction between whether it's commercially available or not. In the past, the only economical level that makes sense to print out a book is around 1,000 copies or something like that. Now, one copy. That's efficient. So basically, if someone's got the digital file, they can go, of course it's still available commercially. You just buy it here. We'll print and send it to you. So, it's become trickier. And I suspect that's true in the patent world as well. That is kind of really hard to say whether it's commercially available or not. It sounds quite plausible to say there should be some terms, and this is why you're given an exclusive right, and you can be compensated, and you can license your patent, but you must license it if somebody comes and pays a reasonable fee. What's a reasonable fee then? It becomes very hard. That's the rub. So, if we just say you have to make it available for license, that's easy to evade. You say "Yes, you can license my patent, it's 40 billion dollars." Ok, that's not realistic, you know. On the other hand, if you say you are forced to license any patent drug for anybody who'd pay 10 dollars, it's like well there's a whole business model of R&D completely destroyed, because it suddenly can't say I am gonna spend 100 million developing this drug if I've then got to license it to anybody in the world for 10 dollars. That doesn't make sense.

Gavin: You talked about open innovation and Wikipedia describes open innovation as "a mindset towards innovation that runs counter to the secrecy and siloed mentality of traditional corporate research labs." What do you think the biggest factor is that would drive that more "open mindset" and why is there a "siloed mentality"?

Jimmy: You have certain companies like Google, which is really quite open and so on. Even Microsoft these days, they fund a lot of open-source projects. But Apple has a completely different culture. If you work at Apple, and tomorrow morning find that Apple has just announced that they've created a car that goes on sale next Wednesday and it's a huge surprise for everybody in the world. You would think, "I work for the coolest company," because that's their culture. It's like "I don't feel offended that I wasn't told about this." If at Wikipedia, we suddenly announce some major new technological feature, and the community hadn't had input, or we hadn't had a discussion, it wasn't open and fully developed, people would be very upset. Because that's our culture. And both are successful cultures in a way. I just think that's interesting. It's just interesting how different companies can have different cultures, both of which can be successful.

Gavin: You talked about global standards and interoperability. Technology, specifically technology IP rights, have become pretty highly politicized these last few years. Do you think that politicization is going to get worse? Is that to the detriment of unified global standards?

Jimmy: Well, it definitely is on all those points, and I do see it getting worse. We have a rise in politicians bashing the internet because it's convenient for them to do so, but we also have the rise of I would say fragmentation of the internet. So, I can give a personal example from this morning. A friend of mine sent me a story on something that happened where I grew up in Alabama. I hadn't heard about this. So, I Googled it to find more news stories to learn more about it. But four out of five of the articles that came up, I couldn't see from here in the UK because a lot of small-town newspapers around the US are blocking connections from Europe because of the European GDPR regulation.

I think they basically decided, we can't comply with this, it would require a fair amount of work just to understand it, and we just don't want the risk. That kind of thing is increasing around the world. I think that's really problematic. The idea of the internet is really that it's global. Global access to knowledge, global access to information. No government in Europe is saying we are worried about this small-town newspaper in Alabama. But they are collateral damage, certainly for Wikipedia. You want that very active Wikipedia volunteer sitting in Berlin to be able to access historical news archives in the US. If that becomes harder, then it becomes harder to write Wikipedia, and the world is sort of lessened by that.

> **"Patents are a technique for making knowledge public rather than keeping it a trade secret."**

Gavin: Does it seem to be increasingly hard, when national values and trade interests are so different, and so polarized in many cases, to have a global system – whether it's on interoperability or standards or access?

Jimmy: Yeah, yeah. It's interesting. I mean was Donald Trump really concerned about TikTok and the safety of teenagers' data? I don't think he actually cared a bit about that, right?

Gavin: He was more concerned about trade and jobs.

Jimmy: Yes, but also just sort of domestic PR grandstanding, against "the foreigners." So that goes on, and that's part of humanity. But it does have the potential to do a great deal of damage to the global internet knowledge ecosystem.

Gavin: In reference to Wikipedia, you once urged us to "Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge." Based on the current intellectual property rights system, do you think we are closer to that dream, or further away?

Jimmy: It's really hard to say. Clearly there are elements in our current system that I think are problematic. But a lot of people often assume that, because at Wikipedia we and the community give away all our work for free, they think I am gonna be some sort of IP anarchist who's against all the rules. But I am not. I would say my deeper concern is the opposite, which is actually, what counts as fair use or not is complicated under the law, and not something that an algorithm is going to be able to know. Is this an image that's being pirated, or is this an image that is used in a way completely permitted by the law for criticism, commentary and discussion? And one of my concerns is, you can pass a law requiring some digital filtering technology. The internet giants can afford that. But what about your small to mid-sized start-up? You are making a higher and higher bar to just get started, which would mean less competition, which would mean entrenching the giants, which is, I am assuming, not what the authors of the legislation were really aiming for.

Gavin: By the time this edition of *Transform* goes out, there'll almost certainly be a new Prime Minister in the U.K. If you could grab the new Prime Minister, and in a couple of sentences, try and get across one key thing to them, what would you say to them?

Jimmy: What I would say, is "Before you pass any internet legislation, please come and have a chat with me, because you don't want to break Wikipedia."

Gavin: Jimmy, thanks very much.

> **"We as a global society aren't thinking through this in a balanced way."**

A CLARION CALL FOR COLLABORATION

DATA WARS AND THE DANGERS OF DEGLOBALIZATION

Francis Gurry

The former head of the World Intellectual Property Organization (2008-2020) says nations must work together to innovate in ways that benefit society.

Can the IP Rights system keep up with the pace of technological change?

That's the $64,000 question. The IP system has never been so popular. If you look at the demand for patents since the 1980s, the curve that was a flat line for 100 years starts to rise. That's Asia playing a big part and China in particular. You have 3.3m patent applications filed around the world each year, and 12.4m trademark applications. That's an indicator that the old system still has a role.

That said, I suspect we need a new layer on it. The big question now is around data. Whose data is it? Do you have a right to your medical data, for example – do you own it?

Data is a whole area that will require a good deal of thought. On the one hand, you have governments adopting data localization laws for operators; on the other hand, there's the so-called free flow of data [where there are no legal barriers restricting the flow of data across borders]. Then individual companies and enterprises are competing on the basis of privacy and data. Apple has tried to make this a competitive advantage. It was once a human right, an absolute right, now it's becoming a competitive issue.

How do you start to sort it out with so many disparate and vested interests?

Yes, and where do you sort it out? The multilateral discussion machinery has broken down to some extent. Take Cambridge Analytica and Facebook. They did something that was not illegal, but was very much frowned upon. It caused outrage. People lost jobs, a company closed and it had massive consequences for something that was not necessarily illegal. But it somehow offended our sense of what is fair practice. And that's one of the problems with having so much new technology –the legislator, the regulator, is always behind.

What role does "open innovation" play in protecting IP rights?

For a long time, corporations formed their own R&D labs. Starting in the 80s and 90s, the idea came along that, "It's unlikely our lab has all the brains in the world. There must be other people who can help us." So open innovation took off.

Following that, we've had some very fruitful international collaboration amongst universities and scientists and researchers, who tend to be more apolitical and more interested in the science. I think risking that is a very bad thing for innovation and therefore for the social benefits that innovation can bring to the world.

So, what's your message to politicians?

Don't throw the baby out with the bathwater – be careful what you're doing! If we're going to close down this system of cross-border collaboration, if we're going to deglobalize, have splinternets and see a balkanization of the world, then that's a complete failure. We seem to be in the midst of a deglobalization wave. It's caused by various factors: Covid, supply chain disruption, deliberate policy measures cutting things off. It's a very bad thing if we lose that capacity to benefit from a multiplicity of societies around the world.

Are innovators responsible for sharing their knowledge?

Yes, especially in health technologies and pharmaceuticals. We also see some political pressure in the climate change area, although personally I think that's a bit misplaced because most clean technologies are complex—a wind turbine might have 500 patents, so it's not like one molecule that you can seize or exercise exclusive rights over.

Why do we have innovation? Ideally, we have it for the social benefits it produces. So, how do we give the IP creator or owner the right to exercise intellectual property

rights without interference from the regulator? There's no single answer. There might be one answer for Covid and another for Monkeypox because there are different levels of threat. We have to find the right balance between the interests of innovators on one hand, and the general public on the other.

How would you encourage the sharing of socially beneficial knowledge?

We have to ask, "Is social benefit sufficiently at the heart of the IPR system? Should the granting of a patent be tested against the social value, rather than business value, of the product?" This is slowly starting to change.

Historically, IP has been "isolationist" – answerable only to its own policy imperatives. That began to change in the 1990s with the TRIPS Agreement. TRIPS allowed countries to make exceptions to patentability requirements in certain areas, such as agriculture, health and environment. IP entered a phase of engagement, which was something new.

That's a constant now. But one difficulty is that people come at it from their own perspective – for example, if you're a health policy person, you're concerned about access, not innovation. So, getting that all together is a difficult trick.

[Editor's Note: TRIPS, or Trade-Related Aspects of Intellectual Property Rights, was the first agreement to treat intellectual property rights as a global trade issue. There was a greater recognition in TRIPS of the need to spread the social benefits of innovation as widely as possible, especially in critical areas such as public health.]

Returning to that question of sharing – should there be more pressure to "use it or lose it" with a patent?

The average time a patent owner keeps a patent and pays the maintenance fees is about eight years. So, I don't see that there's an interest for an inventor to pay maintenance fees for something he doesn't use – the system has an automatic cleansing effect, to some extent.

That said, I do think we could take different approaches for different industrial sectors. For example, you might need 20-year protection in the pharmaceutical industry, where you have much longer periods of regulatory approval – from eight to 12 years, depending on where you are. That's quite different from ICT, where the technology life cycle is much quicker.

What's the responsibility of companies such as Huawei? How can we help the international system?

Huawei is a great innovator, and that's its principal contribution. What it's doing, the social benefits it's giving, is innovation in this range of digital communications technologies. That is extremely important.

Then we come to the protection and policy framework – and it has an extremely important role there too: first in informing policymakers, because you're so far ahead in technology that policymakers need to be educated, I'm afraid, myself included. That's an important role to be played.

Second, to remain engaged in the international discussions on standards. That is a vitally important area whose significance is not fully appreciated. Standards are fundamental to the whole digital economy.

Some countries are investing in STEM and benefitting from the technological innovation that can evolve from such investment. But is there a danger that, for political or economic reasons, other countries are not investing, potentially widening the divide between the haves and have-nots?

Oh yes, that's absolutely the case. Both the US and China invest hundreds of billions of dollars a year in R&D. That's more than the individual GDP of 169 countries.

They're investing in the creation of new knowledge which will give them a competitive advantage — lots of social benefit, too, but a competitive advantage. It's more than 169 countries have to spend on security, health, education and the rest. The gap is getting bigger and the sophistication in science and technology in countries like the US and China – and others, such as Germany, France, the UK, and Japan – is huge.

But how do you start? South Korea, Singapore and China all started from a low base and now have leading positions in R&D. But that's just three countries.

You spent 12 years as Director-General of the World Intellectual Property Organization, striving to get nations to work together for the benefit of everyone. Are you hopeful about the future of cross-border collaboration and universal innovation?

The developments of the last couple of years, where we see security and the economy being conflated, are very difficult and dangerous and I think we have to be very careful here. When you see the number of measures that have been introduced - whether it's a review of foreign investment on security grounds or a review of student intake – it's really very comprehensive and I think a bit excessive. I think we need to really be careful that we don't destroy the basis of what should be the next stage of evolution of the world in terms of co-operation and instead go back to the system of technological sovereignty, technological self-sufficiency, everyone making their own - what they consider to be - strategic products, and industrial strategy comes back. This is something we have to be very careful of.

Tiffany Norwood
Tech entrepreneur / Founder/ Tribetan / Co-founder, SimWin Sports

DON'T UNDERVALUE IMAGINATION

The First Time

You never forget the first time someone steals your idea. For me, it happened early. I was 19 when I filed for my first patent. At age 20, I was a CEO. By the time I turned 21, my patented invention had been stolen.

Along with co-inventor Philip Anthony, I had created a one-strap backpack. We called it the ToPAQ, for Tiffany Oliver / Philip Anthony. The Q was for Quality.

To us, it was personal and precious, and to protect it, we did everything right. We hired attorneys, filed for a patent, and then brought our invention to market. Our innovative backpack was sold in more than 50 retail outlets, including Spike Lee's Joint in Brooklyn. We were cool.

Soon, one of the large backpack companies came to us – a household name. Like so many students, I was a customer of theirs. They wanted to buy our company. I wanted to sell our company. It was hard being a CEO and a senior at university. Three of the four co-founders wanted to sell; one did not. And unfortunately, according to our operating agreement, we needed unanimous consent.

The company that wanted to acquire us did not take "No" for an answer. In a very short time, they created their own one-strap backpack. We lacked the resources to fight or compete with them.

That experience taught me a few things: that it is important to take your imagination seriously; that a patent has no value if you can't defend it; and that it is very easy for the market to know if you are able to defend it. It also taught me to be careful about unanimous consent.

That was the first time.

The Next Time

Soon I found myself on Wall Street, working in Mergers and Acquisitions. In investment banking, sleep is not part of the job description. Armed with a background in computer science, I started automating my job so I could get home before midnight. The program I wrote replicated my role as an analyst, processing and analyzing copious amounts of data on the commercial banking industry. It then handed off the results to another program that would generate recommendations on potential merger targets. Finally, the program automatically generated a report including all the data, insights, and recommendations (including graphics), and sent it to the printer.

In 1992, this program was quite innovative. It was almost as if I had invented fire. When the Managing Director finally asked how I was getting so much done so quickly, I told him it was a software program I created. Immediately a guy named Steve tried to claim ownership although he didn't even code. Eventually it became clear that it was my creation because I had embedded my authorship into the code. Steve was never reprimanded.

I started weighing my options. I knew more about intellectual property rights than the average 24-year old. I already had a patent. I was determined to do something bold to stand up for myself and my IP. A couple of days later, I met the Managing Director and gave him my two-week notice of resignation.

I said I wanted to do a proper hand-off of my projects. I asked him to let me know what his priorities were, and said I would make sure to get them all done before I left. "The software code, however, is my intellectual property," I told him. "The ownership is mine. Like books and music, software is protected by Federal Copyright Law." I added, "You can ask Steve for his code. Mine is going with me."

That was the first time I licensed my code. I gave that company the right to use my software program solely for their own projects, but not to own it or sell it to others. Documentation and limited support came with the licensing agreement.

This program was used as part of the analysis and strategy of a major U.S. bank merger. I still have all of the code and documentation. I am very proud of it. But without IP rights, my creativity would have been stolen and exploited – again.

The Value of Imagination

At its foundation, innovation is imagination made real. That is why I founded Tribetan, an ed-tech company that teaches everyone to take their imagination seriously.

In the post-pandemic world, we need to reimagine everything. We need more imagination, from more people, and we need it fast. We need more imagination, from more people, and we need it fast. And like anything in short supply, the value of imagination is at a premium. Now is not the time to discount innovation or IP.

> ***Innovation is imagination made real.***

I am an inventor-entrepreneur. I have done eight startups, predominantly in the tech space, and currently am the 2022 Entrepreneur of the Year for Cornell University. As much as anyone, I know how hard it is to turn imagination into reality. It includes a lot of suffering in the form of time, money and effort. It's a lot of falling down and getting back up. It's "Am I going to lose my home?"

> ***In the post-pandemic world, we need to reimagine everything. We need more imagination, from more people, and we need it fast.***

To motivate people to take this leap of faith, it's important to say, "Hey Innovator, if you take a chance, you'll own the intellectual property. You'll be able to reap the benefits from your imagination for many years."

Innovate the System

Although intellectual property is all about innovation and creativity, we rarely innovate the system itself.

> ***Athletes and actors get paid for their creativity; so should innovators. The first step in realizing the value of their imagination is to protect intellectual property rights.***

The process of patenting an invention is long and expensive. For that reason, patent ownership often goes to the person or entity with the resources to file, rather than to the actual inventor. When that happens, the creator does not get credit for the invention (the "right to attribution") and misses out on any financial gain.

In the case of our one-strap backpack, we had a patent, so we kept the right to attribution. But because we lacked the resources to defend the patent, we did not fully realize the financial gain of the invention.

Copyright is different. While patents protect an invention or process, copyright protects a piece of writing, music, or some other creative work. And unlike patents, copyright gives creators an automatic right of ownership as soon as the work is in a fixed form, such as printed manuscript.

The right of attribution and ownership is free. If you file with the Copyright Office to have your work formally recorded, the basic filing fee starts at just $45, a sum almost anyone can afford.

Why can't we do something similar for patents? For example, the detailed description and drawings, taken to a notary in fixed form and

dated, could be the "priority date": the first date on which a patent application is filed, which is important in determining whether later applications are classified as novel. Adding the description and diagrams to a blockchain could constitute a provisional patent.

Both options would be fast, requiring just days or even hours. The cost would be low, probably not more than a few hundred dollars. Like the copyright, the inventor would have the option to file and formally record with the patent authority if she choose to do so in the future.

What about disputes and penalties for violations? In addition to giving the creator the right to seek damages, copyright law imposes fines of up to $250,000 and potential prison time of up to five years. Patent law simply says that the inventor can seek "relief."

The vagueness of the patent law leaves inventors vulnerable, especially small entrepreneurs. Years after my time on Wall Street, a multibillion-dollar company violated the license agreement of one of our software products. It was another David and Goliath situation. We sent a cease-and-desist order; they kept using the software.

Our patent was still pending, so we turned to our copyright protection. Based in D.C., I was able to personally call and visit the U.S. Copyright Office. We filed our fixed copy of the software, with our original priority date, and in less than a week, I had the certificate. We paid a filing fee of $65, plus an additional fee to expedite the process. We then did a simple calculation of the money they had made and saved with our software, which was in the millions, and gave it to our lawyers, who drafted a federal complaint and sent it to the company. In just a few months, the matter had been settled.

Throughout the experience, our patent was pending. Had we relied solely on the patent for protection, we would have lost our company.

Note to software developers: always print and date your code.

Use it or Lose It

Only 2% to 3% of patents ever make it to market, and only 1% to 5% of those products are successful. We should use the tools we have to encourage people not only to create, but also to release their creations into the public domain so that their inventions benefit society.

Returning to the backpack example, when our design patent was issued we were given 14 years to use it. During that period we also had to pay more fees. After that period, our protection was pretty much done. Patented inventions that are judged to be useful get 20 years from filing or 17 years from issue,

> **"Innovation for innovation's sake is a waste. We need to get more inventors to bring their ideas to reality."**

whichever is longer. It can take a long time to build a company based on a patented product, so the usable period of the patent may be more like 10-15 years.

What if, instead, inventors were given 10 years to bring an invention to market? If they did, they would then get another 20 years during which the patent could be renewed twice as long as the invention was being used. That would create a built-in incentive to ensure that the invention benefited society. If the invention was never used, it would receive 10 years of patent protection, no more. If the patent was brought to market and used, the inventors would get a total 70 years of ownership.

Think that's too long? For reference, copyright lasts the entire lifetime of the creator, plus 70 years after their death. For those worried about medical inventions, we could possibly have a separate process for life-saving inventions. Or maybe pharmaceutical companies wouldn't feel so much pressure to raise drug prices if they had 70 years to realize a return on their billions of dollars of development costs, instead of just 20.

Awareness Matters

Awareness of IP rights also matters. Because I filed for my first patent as a teenager and licensed my first software in my twenties, I had an above-average understanding of intellectual property rights, and the value of my imagination.

Not everyone understands those things, but they should. That is why I recently joined the board of directors for The Center of Intellectual Property Understanding and was the 2022 keynote speaker for IPAS, the Intellectual Property Awareness Summit.

I encourage anyone interested in IP rights to check out both of these websites for information on tutorials, workshops and other events. With a higher level of awareness, protection and incentives, we will see a new age of creativity that we haven't seen for generations. And maybe someone will actually invent fire.

Hermione Granger is the true archetype of the creator, innovator, and inventor. Hermione is the goal, not the unicorn. The origin story of a unicorn is a rare sighting. The origin story of Hermione is being self-made. A few years ago, JK Rowling debuted a play called *Harry Potter and the Cursed Child*. This play was based on the characters as adults. And Hermione grew up to be ...a black woman. For me, this reinforces that Hermione is meant to be all of us. The so-called muggles that are full of magic, creativity, innovation, and invention. In the spirit of "open innovation, " I would like to share some of my intellectual property with a poem called "Hermione Rising." And like everything of any substance it starts with the imagination.

Hermione Rising

I imagine a new way, a different way...

I Imagine a Better Way!
Something Disruptive and innovative,
Used and revered
Demanded and paid for
something...transformative

Imagination
Why do we deny it (and discount it)
It is the source of all innovation
Einstein was theoretical
not applied
DaVinci an artist and a scientist
George WASHINGTON carver, no vision no hope
and Harriett had to imagine freedom before
she took the first step

I have a dream
-of traveling to space
-of curing cancer
-of starting companies
-of running for office
-of peace unity equality and equity

You get what I am saying

It is not about the how
It's about the why
The calling
the sense of purpose

No need to TEACH imagination
Just endorse it

And with grace give space for it

It's not to be packed away
It should be on display

In schools, in offices,
a priority among the others

Serious vote
For tinkering, sketching,
making and for play

Forcing memorization
of someone else's prior imagination
Is not the way

The recipe-
Give space to expand,
and extend a concept

Through empathy and understanding
Through diversity and collaboration

An embrace for imagination
in the case of them all

The more minds that imagine together,
the more innovation blossoms

The more diverse these minds
the taller it grows
And if It's fueled with love and understanding
it thrives and soars

We are 7 billion strong
Brothers and Sisters
We can do anything
Unless we fight each other
Go Human or Go Home

To my fellow Daydreamers,
You are our future game changers
Your place is at the top of the class

Take out your wand
And cast the spell of
"I Want That"

it is going to be messy

REALITY IS ALWAYS MESSY

Practice, Rehearse, Experiment, Try!
screw up and then rise up
Wield the magic of hope and faith

and know that the world may
attack your genius now,
but love you for it later

Hermione is Rising
and her power is limitless

And by God's grace, so is yours
I pray you too will use it for the greater good.

Until then, Tiffany

WHY QUALITY OF LIFE MUST ECLIPSE QUANTITY OF IDEAS

Manuel Desantes Real
Co-Director, Global Innovation Law and Policy Research Group, University of Alicante, Spain

The world has been changing arithmetically for many millennia. Since human beings were aware of their consciousness, we have been changing arithmetically, step by step. All our social, political, legal and technical structures have been adapted to this type of change. But things have changed dramatically in the last thirty years.

The arrival of the internet, social networks, geo-location, the Internet of Things, artificial intelligence, blockchain technologies, 5G, the metaverse, quantum technologies, nanotechnologies: all these have transformed the landscape at the dawn of the fifth industrial revolution.

A system unfit for exponential change

Now we face a new era: the cognitive era. Now, change is no longer arithmetical but exponential. And our structures are completely unfit for a world that is moving exponentially, and this new world no longer revolves around tangible products or services or investments. Rather we are already in a new world where only intangibles have value in our society.

So for me the question is very simple: how to approach innovation and Intellectual Property in the new world?

The Intellectual Property system was born in the 19th century to serve the First and the Second industrial revolution. The point of these moments was to encourage human creativity and to reward those who created something new.

Innovation demands quality, not quantity

This is what we called the world of the novation – Novatio being the Latin word for something new. Therefore, our Intellectual Property system rewards the novatio, but not the in-novatio, the know-how to bring these new things into the market for the benefit of society.

But in this new cognitive era, what really matters is not the novatio, what really matters is the in-novatio.

What matters now is not how many inventions or how many patents we manage to register, but how to ensure that all human beings, all our societies, benefit from the consequences of such inventions and such patents.

So as we increasingly shift from the world of novatio to the world of in-novatio, it is time to openly state that it is a mistake to continue focusing the success of our Intellectual Property system on the number of patent applications or on the number of patents. Instead, we should focus on the quality of our patents.

New mission to create social value

What should be the role of companies like Huawei in this new world? My view is that we all have to review our mission.

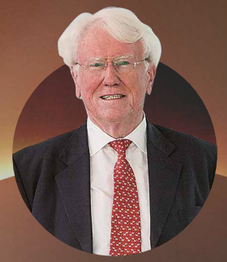
The new Intellectual Property system should be anchored in innovation. So it should be anchored in the creations that society requests and that actually ameliorate the quality of life of human beings.

The Intellectual Property system should assure that these are the creations that merit protection because these are the ones that bring actual value. And the mission of companies like Huawei should be to put the accent again and again on this point.

So please do not forget that crises are no longer cyclical: crises are now systemic. Companies like Huawei will have to learn how to live in situations of permanent crisis and learn how to sail against the wind.

> ***"Our system is unfit for exponential change."***

Andrew Williamson (Moderator)
Vice president of government affairs and Economic Adviser at Huawei Technologies



Heinz Goddar
Patent Attorney at Boehmert & Boehmert, an IP law firm in Germany

Audrey Yap
Managing Partner and founder at Yusarn Audrey, an IP law firm in Singapore

Broadening the Innovation Landscape

Creating IP, driving innovation

The transcript below was taken from an event on Intellectual Property held on June 8 at Huawei headquarters in Shenzhen, China. It has been edited for length.

Alan Fan
IP attorney and leader of Huawei's IP team

Patrick Nijs
Former Belgian diplomat and Head, EU China Joint Innovation Center

Mattia Fogliacco
President, Sisvel Group

Andrew Williamson: Some experts, including many economists, suggest that over-protection of patents is not conducive to innovation. What are your opinions?

Heinz Goddar: If somebody patents a lot, he indicates he wishes to share – by licensing, for example. So if patent protection is strong, innovation occurs because investment in R&D will take place. And if that is done, the sharing can take place by giving licenses to others.

Audrey Yap: We have to ask, if not for the confidence in the IP system and rule of law to keep proprietary processes safe, would companies transfer IP at all?

IP is the only system that encourages meaningful investment in innovation. With no IP system and patent protection, would inventors, investors and even policy makers behave the same? Would anyone spend money and years on R&D, if they knew it could all be taken away?

Alan Fan: Huawei has about 200,000 patents. Maybe there is another company with 100,000 and another with 50,000. There are just enormous amounts of patents in our industry. That leads to a situation where the system has to evolve to a world of sharing. You cannot imagine that we could use all of our 200,000 patents to exclude our competitors from the market. Patents enable and foster sharing among competitors.

In the course of doing this, certainly there are conflicts, and there are issues. One of them is patent quality. The top 10 inventions we celebrate today are the ones that bring value to consumers and to industries.

In particular, patents related to standards create value. For example, smartphones can be used in any network, in different countries. This gives consumers more options: they can buy whatever phone they like, based on appearance or functionality. The phones have a common feature of downloading data and video and playing games, really quickly. These capabilities are embedded in the standard. And the standard is the contribution of many people; it is not just one company making the contribution.

But there are also low-quality patents that may not generate much real value. Maybe a patent centers on a trivial feature that you don't really need. But if you litigate, it can be expensive because the cost of litigating a good patent and the cost of litigating a bad patent are essentially the same. So the key is to guard the quality of patents through the patent office and through the courts.

Andrew Williamson: Does the current IP system exacerbate inequality?

Patrick Nijs: If the question is: "Does IP help in social development?" my response is no because, in my opinion, the IP system has been invented to make sure that the ones who have keep what they have, to prevent the one who doesn't have from reaching the same level. We must move from a protection system to a system where we really use it to share and to share on its use which makes value for everyone, so that we can deal with the immense challenges we face moving forward.

Licensing and technical standards

Andrew Williamson: Let's talk about patent licensing in Europe recently, and what's been the impact on innovation there.

Heinz Goddar: I'm from Germany, which has the most inventions per capita, I think, in Europe. This is not the result of ingenuity, but of our Employees' Invention Law. Created in the 1940s, it says that whoever invents something and gives it to his company or university, gets fair remuneration. This incentive system took effect in 1942, and has produced many patent applications. Licensing is the best way to ensure that inventions protected by patents are shared with others.

> *"Would anyone spend money and years on R&D if they knew it could all be taken away?"*

The MP3 system of digital audio compression practically enabled the compact disc revolution. More recently, we have organic light-emitting diodes (OLED). Both of these inventions originated in universities or public research institutes which, by themselves, had no means of commercializing this technology or sharing it with others. But the IP was licensed: MP3 by the Fraunhofer Association and companies, and OLED by a company originally called Novaled, now owned by Samsung. Neither invention would have succeeded without strong patents and licensing.

The German government, particularly the Ministry of the Economy, considers itself the custodian of small and medium sized enterprises in Germany. On the 29th of June of this year, the working group for industry-university cooperation at the federal Ministry of the Economy, which I have chaired since 2001, brought the newest edition of the so-called master agreements of templates for industry-university cooperation into the market.

These agreements are widely used in German industry, and allow SMEs to engage in joint IP development without going to expensive law firms. These template agreements can be a model for other European countries.

Licensing, then, is the basis for continuous technology transfer from public research institutions and universities to particular companies, especially SMEs. Looking at innovation in Germany, I would say that about 80% comes not from the likes of Pfizer or Siemens or Daimler, but from small and medium-sized enterprises with less than 1,000 employees. Without patents, no innovation would be created, and without licensing, no innovation would be shared.

Audrey Yap: In 2021, a joint study of 127,000 European companies by the European patent office and the EU Intellectual Property office showed that businesses with private patents are 22% more likely to grow and 9% more likely to experience high growth. So there's a definite positive correlation between IP rights ownership and economic performance. That's vital as we come out of the pandemic.

Earlier, we talked about the importance of licensing. The emergence of new innovations means there are lots of licensing opportunities across different industrial sectors. Renewed interest in leisure reading has helped the publishing industry, accounting for 8.5% of the global licensing business. European e-commerce has grown by 47%, and last year more than half of China's retail sales came from e-commerce.

In the past, IBM was perhaps the best example of this, being among the first companies to break US 1 billion dollars in annual patent royalty revenues. But today, Microsoft and Ericsson report licensing revenues of over two billion per annum, and Qualcomm is still leading with targets of over 6 billion in patent licensing revenues. So licensing is big business, and companies are concluding that patents can be revenue generators as well, rather than pure cost centers.

Licensing has its challenges: How to do it? How to price your IP? In technology we see convergence, which means needing an opportunity to license and cross license. I think more than ever we see this in the automotive industry, where we have e-vehicles autonomous driving.

The unique characteristic of IP is that its value can change dramatically in how it's deployed. Paying a $15 license fee to a chipset producer for a mobile phone that sells for $100 a very different value proposition from paying a $15 royalty used in autonomous driving. Essentially same patent, but vastly different values. I know it's both an art and a science and I could go on, but I'll stop here.

Andrew Williamson: Alan, since you took over as head of Huawei's intellectual property department last year, can you brief us on the progress of Huawei's patent licensing work as well as Huawei's strategy goals for future patent licensing?

Alan Fan: We've been making good progress: our patent values are being recognized by the industry.

More broadly, let me emphasize the importance of IP and technology standards. As we discussed, companies will be willing to share their knowledge if they are incentivized with patent rights. This is especially important in the area of standards.

So we really have to license our patents, not just for the financial reward, but also for the advancement of our industry.

Diving into the patent pool

Andrew Williamson: Mattia, we heard earlier about the importance of patent pools. A patent pool is a group of at least two companies that agree to cross-license patents related to a particular technology. How do patent pools promote patent licensing?

Mattia Fogliacco: We have a lot of challenges that can only be addressed by innovation. Often, innovation means generating very complex technology landscapes, and that requires interoperability between competitors, products of competitors, and different sets of products.

For example, the Internet of Things (IoT) creates interconnected ecosystems that require standards to ensure interoperability. These standards must be patent-protected.

Standards can really help address this sort of complexity, and make sure that the very best technology solutions are picked to solve technological challenges.

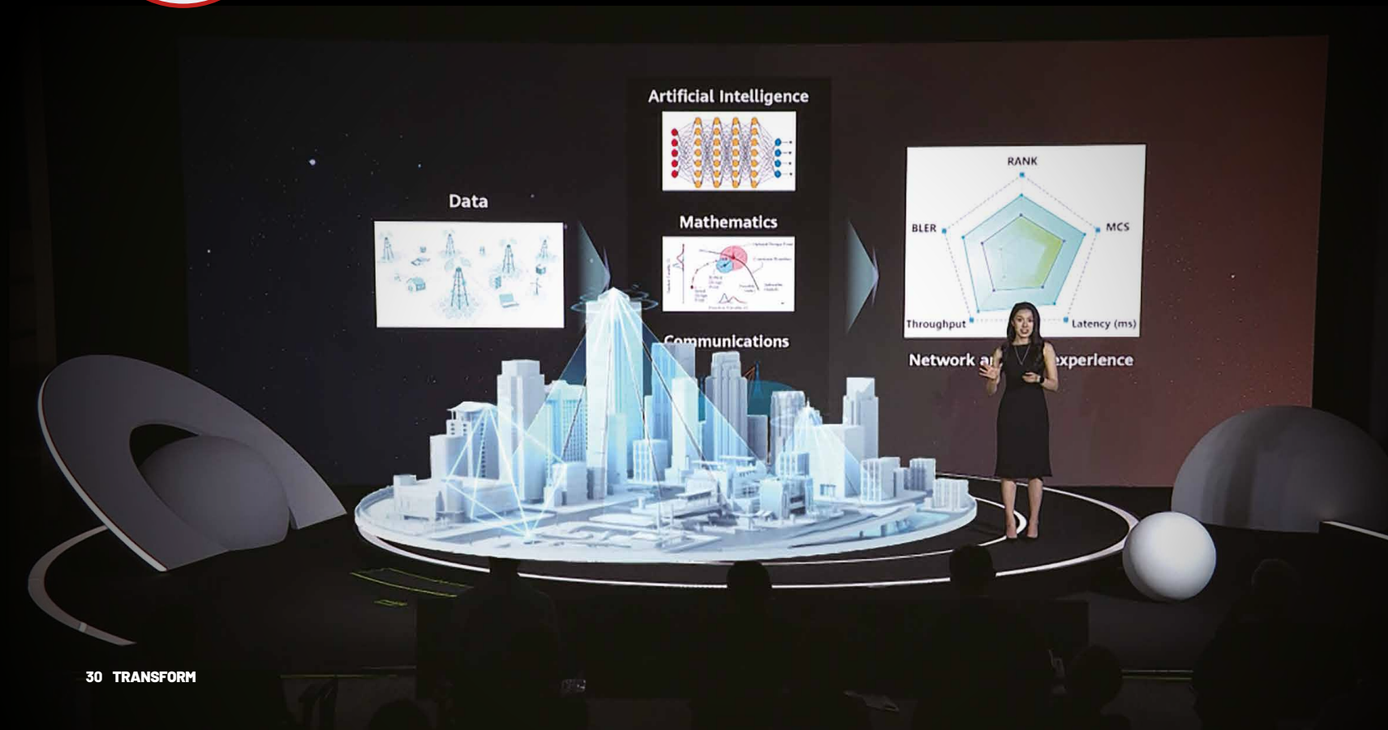
But whenever there is a standard, there is a need for sharing, so we need efficient forms of intermediations that allow this sharing. These forms of intermediations often take the form of patent pools.

To succeed, a patent pool needs two things. First, it needs to represent true innovation. A pool should represent only truly essential patents and should really encompass seminal technologies. But we also need a pool that can understand and read the market, and can bring an offering that is suitable and meets a real need. Otherwise, there will be no technology adoption.

It's really about striking a balance between implementers and innovators, the interests of these two parties to the benefit of the society. And everything is based on this efficient way of sharing.

SOLVING NETWORK'S *MISSION IMPOSSIBLE*

Dr. Xi Zheng
Principal Research Engineer,
Huawei Technologies



You're one of the lead inventors of SRCON – Simulated Reality Communication Networks. What is this, exactly?
SRCON is a "digital twin" for mobile networks. A digital twin is basically a digital image of a real physical structure or entity. By adding different inputs to a digital twin, you can create models that let you predict what will happen in the real world. SRCON helps us predict what will happen on a real-world network.

For example, everyone has a cell phone. When you watch a video or movie on your phone, you connect to a mobile network. But sometimes, when you move around, the connection is bad, and you get poor service. We want to tune the parameters of the network so that everyone gets the best possible experience. But it's hard – impossible, really – to do that on a real-world network.

What's hard about it?
You can't possibly try out every combination of inputs on a real network. There are too many combinations, and testing them all would take forever. Plus, if you didn't do everything just right, network service would deteriorate badly – it would be a disaster for users. We can't risk that.

Instead, we try out different combinations of inputs on a digital model – SRCON – and get the information we need to optimize the network without putting customer experience at risk.

So SRCON is evaluating customer satisfaction?
Not directly, no. It looks at certain metrics: data rate, throughput, service delay, and so forth. If you know those metrics, you automatically have a pretty good idea of what your customers are experiencing. Polling customers, for example, is too inefficient and takes too long. We can get the same information with digital twins – and we can get it much faster. For example, SRCON can evaluate the performance of a mobile network covering a metropolis like Shenzhen within 30 seconds.

Because there are so many different combinations of parameters, the numbers get really big.

In a large city, for example, a network might have 500,000 base stations that send and receive wireless signals from phones and other connected devices. Five hundred thousand is a lot – but it's nothing compared to the combinations of network parameters you'd need to test, in order to optimize how those base stations perform. That number is ten to the power of 2,000,000. So you can't do an iterative, trial-and-error process. You need some kind of powerful technology to do the work at scale.

You're the lead inventor of SRCON. Does that mean you invented it yourself?
We have a large team. I would say about 100 people. The team consists of front-line engineers with years of experience, plus researchers like me who have Ph.Ds. We also have university professors working with us. One principal contributor to SRCON, and in fact the one who proposed the idea of building a digital twin for mobile networks, is Professor Tom Zhi-Quan Luo from the Chinese University of Hong Kong in Shenzhen.

I'm on the algorithm design team, which has about 10 people. We developed the core intelligent design of SRCON.

What did that involve?
To simulate a real-world network, you need to model multiple factors. One key factor is the wireless propagation environment: how radio signals are transmitted to a cell phone or other user terminal. We have to model those transmission patterns in the digital twin, so we can predict what will happen when some parameters in the base stations change. I'm responsible for developing that part.

When did you start working on this?
Right after joining Huawei, a little more than two years ago. Before that, I was in school, getting a Ph.D. in wireless communications at Tsinghua University [one of China's top research universities].

Is SRCON a breakthrough technology?
Yes, I believe it is. SRCON builds on pre-existing research on wireless communications that has been going on since Claude Shannon published his work on information theory more than 70 years ago. But until now, not a lot of people have understood that the network-level problem was so important.

Wireless communications tend to focus on things like signal processing – basically, trying to make the wireless connection stable, so the signal doesn't drop out, and to make wireless transmission work as close to its upper limit as possible. We had mostly focused on one user, connected to one base station. We hadn't put so much effort into making the parts of an entire network, consisting of tens of thousands of base stations, work well together.

There are several reasons for this, but one reason was that it's really difficult! You have to know how the base stations interact with each other and with the environment. That's super-complicated, and there was no mature model for us to study. So getting base stations to work well together was *Mission Impossible*.

SRCON lets us design rules for how to optimize the performance of the whole network. That means not just improving user experience, but doing so with minimal energy consumption.

SRCON helps the environment?
Yeah, base stations consume a ton of energy. But actually, there are certain hours where lots of users are connected and need service, and other times when there aren't many users at all. Keeping base stations active all the time is a waste of energy. It's better to shut down the idle units. SRCON lets us evaluate the best hours to shut down some of the base stations.

Couldn't you do that manually? Just turn off 80% of them in the middle of the night, when most people are asleep?
Well, how do you know which units to shut down? If you turn off the wrong 80%, some users won't get good service – or any service at all.

And which hours would you shut them down for? Maybe for business, the idle hours are 1am to 5am, but for households, it's actually 9pm to 5am. There's no one rule.
SRCON does a better job figuring out how to minimize energy use – with little compromise on network performance.

So SRCON is a big deal. Have other inventors come up with anything similar?
Everyone will claim they have something similar. But are their solutions as good as SRCON? I don't think so. We ourselves had tried other solutions in the past, and they just weren't good enough.

For example, right now people are deploying high-definition maps to see how radio signals propagate in different parts of a city or rural area – how the signals reflect, how they scatter.

The best result has generated known accuracy that's much lower than that of SRCON.

What drew you to this line of work?
I've always been good at math and physics. For me, this was kind of a natural choice.

Since I was little, I've been fascinated by research, engineering, knowing how things work and how to make them work better.

As a successful inventor, do you have a particular technique for "thinking outside the box"?
I just forget about the job for a while, and go talk to people – stop thinking and take a break.

When you go out and see other people, and other things, you'll say, "Oh, here's something new..." And then sometimes, if you're lucky, you'll find a connection between that new thing and the work. It doesn't happen that often, but you only need it to happen once in a while to be creative.

You're one of the lead inventors of the SRCON patent portfolio. Can you give us a sense of what that means?
We have four patents in the SRCON portfolio. The basic patent is about radio signal propagation. That patent has four listed inventors. I'm the primary contributor, which means I was in charge of developing that patent, and I wrote the patent application.

> **"Since I was little, I've been fascinated by research, engineering, knowing how things work and how to make them work better."**

But our team consists of people from lots of different backgrounds. Again, there are people like me, who have Ph.Ds., people know math and AI and the theoretical parts of algorithms. But there are also team members who are experienced field engineers. They're the ones with the knowledge and experience to identify important problems that need be solved in the real world.

And it's not just Huawei people. We're working with academic researchers from outside the company. We've formed a joint lab – Huawei, plus the Chinese University of Hong Kong in Shenzhen, and the Shenzhen Research Institute of Big Data. We've got at least half a dozen professors and outside researchers working in this joint lab.

What's the most exciting breakthrough possible – the Holy Grail for SRCON?
Right now, we're all just thinking about how to make SRCON more powerful. The goal is not just to produce the best network performance, but also to reduce energy consumption. The technology is not perfect. We're still working on making every little bit of it more accurate, more precise.

The cool thing is that we're doing something that will benefit the entire telecom industry – and lots of other industries as well. As a matter of fact, fantasies about virtual reality and augmented reality in science fiction and futurism – including the metaverse – build on a high-speed network. For that reason, SRCON is expected to accelerate real-world creation of 'extended reality': the combination of VR and AR. It's great to be working on a technology that has such a broadly beneficial impact on society.

> **"It's great to work on a technology with such a broadly beneficial impact."**

THE WASTE-WATCHERS: SPINNING STRAW INTO GOLD

by **Adi Gaskell**

Bernard Sadow's Eureka moment came in 1970 as he went through customs at San Juan Airport in Puerto Rico. En route home from a family vacation, he was struggling with two large suitcases when he noticed an airport employee effortlessly wheeling a heavy load on a cart. Back home, Sadow began experimenting, and soon he held the first successful patent on wheeled suitcases.

Connecting the dots this way is a common form of innovation. One study of all the patents ever registered by the U.S. Patent and Trademark Office found that 40% are "recombinative": they combine two or more existing technologies and configure them in a new way.

It sounds simple enough: combine old inventions to produce a new one. But research shows that innovation is happening so quickly that society is losing its ability to manage that innovation capably.

Intangible assets

In their book *Restarting the Future*, British scholars Jonathan Haskel and Stian Westlake argue that the intangible economy has replaced the one that dominated the industrial age. "The economy is no longer the physical stuff, like parts and machinery, and is more about things that we can't touch and feel, like research and development, brands, artistic originality," Westlake explains.

The authors say much of the global economy's lackluster performance in recent decades is due to the inability of institutions to keep up with the changing nature of innovation and growth. In the UK, for example, where the first patent was granted as long ago as 1449, intellectual property law provides comparatively little protection for software. Given the importance of code in the modern economy, this is problematic enough. But when ethics and privacy activists demand that AI be made more transparent and that its algorithms be open to scrutiny, legal protections become critical for software makers.

Then there is the issue of patent trolls who buy intellectual property to extract rent from those who want the IP for commercial use. While some research suggests that trolls can be useful intermediaries between inventors and larger organizations, the prevailing image is perhaps typified by the convicted fraudster Martin Shkreli, who achieved notoriety for buying the IP of certain drugs, then raising their prices by more than 5,000 percent.

Diminishing returns

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Indeed, research from Stanford found that organizations employ about 20 times as many people in their R&D departments today as they did in the 1930s, and that over the past few decades roughly $5 trillion has been spent on R&D in the U.S. alone. Yet the returns have not stacked up. Indeed, Forrester Research found that American firms are currently spending $1 trillion per year on IP assets that are not being used to their fullest potential.

A gummed-up system

Part of the problem is that many organizations lack a clear understanding of the patents they have, and how those patents fit with their strategic goals.

Platforms such as Quirky and Marblar were set up to help firms to reclaim some of the sunk costs of corporate R&D. The platforms allowed companies to put unused IP into the marketplace for innovators to build on, with the rewards of any subsequent commercialization shared by both parties.

Unfortunately, neither platform was successful. In 2014 Nigel Swycher and a partner launched Cipher, a company that uses AI and machine learning to manage data related to IP ownership. Swycher says previous platforms failed because patents are complex.

"The first thing to consider is the value of intellectual property, and the second thing is the ability to trade in intellectual property, and the two are not always the same thing," Swycher explains. "Perhaps the best analogy is the human heart. If we think about how much our own heart is worth to us, it's a great deal, but when we think about its worth on the secondhand market, it's often that of a slab of meat."

While some patents can be valuable in isolation, technologies such as the smartphone have hundreds of thousands of patents related to them. This explains why Google spent $12.5 billion to buy Motorola and its 20,000 mobile patents. Only in the aggregate were those patents valuable.

Small companies are playing catch-up

Technology's complexity creates its own problems, including the risk that its benefits will be unequally distributed. For instance, research by the World Economic Forum finds that many small and mid-sized enterprises (SMEs) want to adopt digital technology more aggressively, but face barriers that include financial constraints, a lack of skilled labor, and insufficient support from senior leadership.

This is consistent with other studies showing that the use of AI and other technologies could help SMEs cope with the disruptions caused by Covid, but that very few businesses are actually using those technologies.

Bigger organizations benefit not only from having the means to make huge investments into R&D, but from other intangible factors such as the strength of their brand, the robustness of their supply chains, and the skills of their workforce. Such elements give bigger companies a competitive edge, and create barriers that help keep potential rivals at bay.

A brighter future?

Some believe that recombinative innovation could be enhanced through greater disclosure and transparency. For example, privacy and ethics advocates are recommending that "explainability" be made a central part of AI systems. But if companies are legally required to make their AI completely transparent, then the IP of those companies will receive weaker protection, and rivals could reverse engineer their algorithms.

In the years ahead, intellectual property will change in ways that may come as a shock. The Kremlin, for example, has announced that Russian companies no longer have to compensate IP owners from Western countries that are "unfriendly" to Russia. And the Covid pandemic has sparked conversations about the need to waive patent protection on life-saving vaccines.

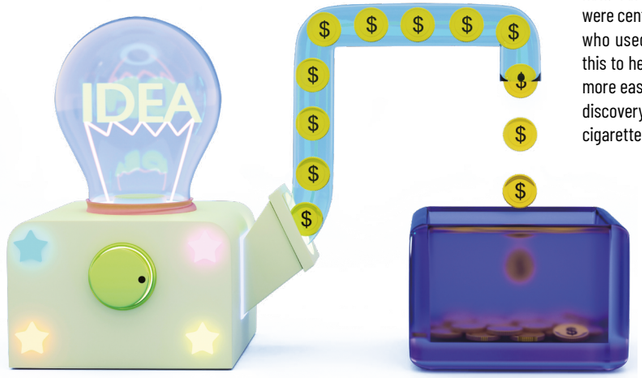
It's said that meaningful change requires a burning platform. The last few years have served up plenty of those. Yet it remains to be seen whether this will result in the kinds of changes necessary to make the modern economy a fairer and more satisfying place.

> ***"Technology's complexity creates its own problems."***

WHERE DO COOL NEW IDEAS COME FROM AND HOW DO YOU TURN THEM INTO A BUSINESS?

by **Prof. Christian Stadler**

Author, "Open Strategy: Mastering Disruption From Outside The C-Suite"



The influential German sociologist Max Weber was the first to formally study bureaucracy. He loved its precision and speed, its hierarchical structure, and its written rules. In his view, it was the most efficient way to organize government and business.

Franz Kafka's novel, *The Castle*, depicts bureaucracy rather differently. After arriving in a new village, a land surveyor tries to contact the castle official who summoned him, only to find himself continually frustrated by opaque layers of local bureaucracy. By the time the unfinished novel stops mid-sentence, our protagonist is no closer to his goal.

Most modern readers would find it easier to identify with Kafka's portrayal. Too many large organizations stifle individual initiative with endless processes, meetings, and paperwork. Creativity does not come in a bottle, it needs time and space to flow freely.

Structured approaches such as six-sigma, stage-gate, and total quality management are a tried and tested way to prevent creativity. What we need is idleness, connectivity, and the room to enable happy coincidences. Companies can create such innovation cultures if they follow three simple steps and keep the bureaucratic monster at bay.

Step 1: It's all about recombination

Let's start by reminding ourselves where new ideas actually come from. An outdated but persistent myth romanticizes 'the Eureka moment'. In reality, few creative ideas result from a sudden spark of genius. Almost all are a recombination of existing ideas.

Take Henry Ford's mass production of cars as an example. "I invented nothing new," Ford said…."I simply assembled the discoveries of other men, behind whom were centuries of work." The first discovery he assembled came from Eli Whitney, who used relatively unskilled workers to produce parts for muskets. Taking this to heart, Ford started to think of a car manufactured from parts that could more easily be produced in bulk instead of custom making each car. The second discovery was borrowed from the tobacco industry, which had started to divide cigarette production into a sequence of steps. Finally, he adopted assembly lines from the Chicago meatpacking industry.

If recombination sits at the heart of creativity, companies need to ensure that staff have access to a wide set of ideas. Expertise is useful but not if it comes at the price of silo-thinking. What you are looking for are jacks of all trades who are also masters of one.

An additional complication is that solutions often lie elsewhere. When the epidemiologist Gary Slutkin retired he took an interest in neighborhood violence. He was an expert in infectious disease, having spent his career battling cholera, tuberculosis and AIDS. Statistically, he noted, violence spread in a similar manner to contagious diseases. With this insight, he developed a new method that mimicked the battle against pandemics. The results were phenomenal, reducing violence between 41 and 73 percent in targeted neighborhoods.

If new ideas are the product of recombination, often emerging from fields less obviously connected to the issue at hand, the next question is how companies can create an environment where this is more likely to happen.

> ***Creativity does not come in a bottle.***

Step 2: Create room for serendipity

The Persian fairytale, *The Three Princes of Serendip*, tells the story of a powerful king who sends his sons on a quest. On their travels they encounter a number of happy coincidences. Smart companies create the space needed for such coincidences to occur.

In 1968 Spence Silver, a scientist at 3M, accidently developed an adhesive that did not stick properly. For five years he shared his "solution without a problem" with anybody who was prepared to listen. Eventually he stumbled across Art Fry, a chemical engineer in the company's tape division, who had the idea of using it to prevent his bookmarks falling out of his hymn book as he sang. To develop the idea further, Fry was able to utilize a 3M policy that gave employees permission to spend 15% of their time on whatever project they chose. The Post-It note was born: if you want happy coincidences to happen, create opportunities for people to meet and idle in a similar manner!

You can further enhance the chances of serendipity by using imagination games. As Martin Reeves and Jack Fuller explain in their new book, *The Imagination Machine*, play frees the mind of the usual constraints we have in a corporate setting. It gives us the license to do unusual things.

Rather than looking for a carefully thought through solution, we just try things. We might come up with ideas that have no immediate use but as we know from Silver and Fry's encounter, there is a chance that someone else has the problem we are looking for.

> ***Play frees the mind of the usual constraints.***

Step 3: Use the power of the crowd to turn your ideas into businesses

Knowing that new ideas are the product of recombination and that is more likely to happen serendipitously, we also need to rethink the way we turn creative ideas into successful new businesses.

Some products will neatly fit into the current production and distribution system, but don't be surprised if truly creative ideas require an entirely new business model. The chances that you are able to develop such a business model on your own are pretty slim. Your own experience holds you back, as you will instinctively opt for familiar solutions.

In a new book, *Open Strategy*, which I co-authored with Julia Hautz, Kurt Matzler, and Stephan Friedrich von den Eichen, we offer a more fruitful method. Why not set up a workshop that brings together an equal number of people from your own company and outsiders? Those from inside the firm should represent different departments of the company. Those from outside will be from entirely different industries, bringing with them a diverse portfolio of experiences. Make sure the external participants sign a document to ensure intellectual property rights are not turned into an issue afterwards.

First, you introduce the participants to the new technology you would like to find a business model for. Next, you ask them to note down as many business ideas they can think of, with this technology in mind. They write them down on a Post-It Note and stick it on a wall. Once they are done, everyone picks an idea, before joining different groups you set up. Each group will have an equal number of your employees and external participants. This connects outside thinking with inside knowledge of what's actually achievable. Every group decides which of the ideas brought by the different members is the most promising and develops a short pitch for this business idea.

Each group then presents their idea and a vote is taken. Half the teams will be eliminated and their members distributed among the surviving groups. These teams develop a full-fledged business model, presenting it once again. This time senior executives will be present and a final vote is taken. This process facilitates the emergence of entirely new business models by leveraging the wisdom of the crowd.

Never forget: Bureaucracy must die

The three steps will help you to find creative ideas and turn them into viable new businesses. Bureaucracy, however, still has the power to kill any creative spark. Leaders should not shut themselves away in their castle, fortified against innovative ideas by layers of hierarchy and rigid process.

They need to embrace the unconventional and protect those who take risks by not adhering to the norm. They are the unsung heroes of creativity.

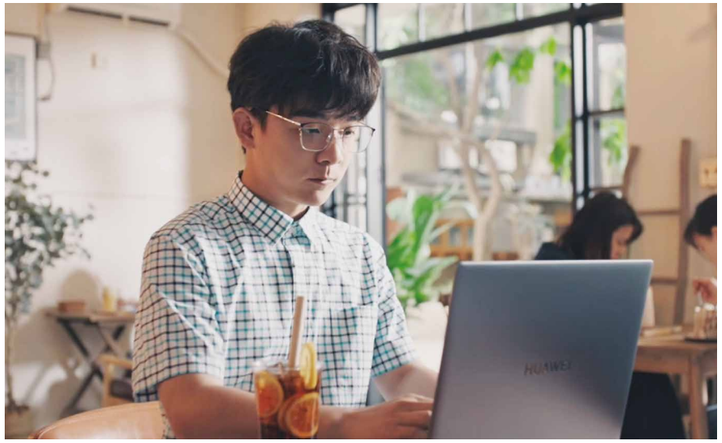
VIDEO SERIES

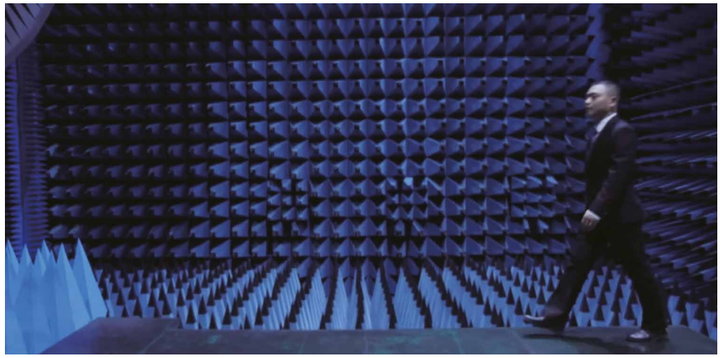
Huawei's IP journey

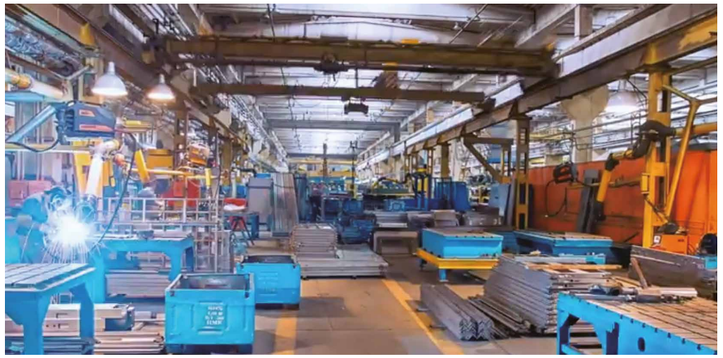
Huawei hasn't always been a tech leader. For years, it was a small, struggling company with few innovations to its name. When it finally began creating its own IP, it wanted to protect its innovations. Here's a look at the role IP played in getting Huawei to where it is today.

A future in our head

The youth of today have questions – about cell phone towers, breakdancing, and how the right sort of ring could save a blind person's life. What's this got to do with intellectual property? Watch the video to find out.





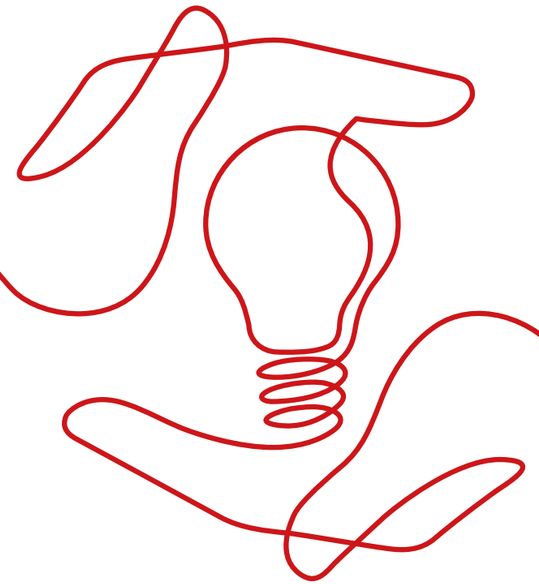


IP makes innovation possible

Does IP really make the world go round? It just might. It certainly provides an incentive for companies to do the hard work necessary to create something new and useful.

Scan the QR code to find out more and to watch these three videos

HUAWEI IPR VISION AND STRATEGY



Huawei's IPR Vision:

- Protect innovations in a sustainable manner and proactively build high-value patent portfolios in the global marketplace
- Provide safeguards for the company's business operations worldwide
- Encourage the fair and broad use of technologies and drive industrial prosperity and community growth through patent and technology licensing

Huawei's IPR progress:

- One of the largest patent applicants anywhere, with more than 110,000 active patents
- Huawei leads in mainstream standards such as 5G, Wi-Fi 6 and H.266, and has entered into licensing agreements with pioneers in a wide range of areas, including the telecoms industry, connected cars, Internet of Things, and smart homes. Acting as both a patent holder and implementer, Huawei's licensing philosophy is a balanced one: ensuring reasonable compensation of R&D investment, guaranteeing incentives to innovations, as well as a sustainable ecosystem in the industry
- As a result, over the past five years, more than 2 billion non-Huawei smartphones were licensed to Huawei's 4G/5G patents, including most smartphones priced over U.S. $500. By openly sharing our 4G/5G cellular patent portfolios, Huawei supports digital and intelligent transformation of the automotive industry. Currently, about 8 million connected vehicles per year are licensed to Huawei's 4G/5G patents

A GLOBAL IP TEAM

Huawei's IP team is dispersed throughout the globe. Apart from its China Headquarters, Huawei has also set up IP divisions in Europe, the Asia-Pacific, the Americas and the United States, where the teams strive to serve innovations of local research institutions with operational expertise and share Huawei's IP on the ground.

Steven Geiszler

Head, United States IPR Department

Huawei's American subsidiary Futurewei Technologies is home to the U.S. IPR Department, a team of 13 lawyers, patent agents, and paralegals in Dallas, Texas and in Silicon Valley, California. The team manages U.S. patent prosecution, licensing, and litigation in addition to other intellectual property matters.

Responsible for some of Huawei's key technologies and issues, the U.S. team relies on seasoned personnel to provide expert advice to Huawei and its inventors. Huawei established the U.S. team in 2008 and soon hired a veteran U.S. patent practitioner, Paul Hashim, to lead the team beginning in 2009. Paul brought to Huawei private practice experience from firms in New York and Washington, D.C., as well as corporate patent department experience obtained from his work at Nortel and Texas Instruments. The U.S. team put in place patent prosecution and review programs that led to issuance of many of Huawei's key patents and portfolios in important technologies such as 4G LTE and 5G cellular, as well as the H.266 video codec standard.

With a shift in emphasis from patent portfolio development to licensing, leadership of the U.S. team transitioned in 2021 from Paul Hashim to Steven Geiszler, who joined the U.S. team in 2016 after 15 years at international law firms, handling complex patent litigation in venues including some of America's key patent courts, such as the Eastern District of Texas, District of Delaware, and U.S. International Trade Commission. For that work, Steven was recognized in distinguished directories such as Chambers USA and Best Lawyers in America, and he often speaks on patent issues at conferences and universities around the world.

Other U.S. team members have advanced degrees and industry experience in engineering and computer science. The patent prosecutors, who make up about two-thirds of the U.S. team, not only prosecute (i.e., apply for) patents, but they work closely with inventors to identify and characterize new inventions and coordinate with outside law firms that handle even more patent applications. All U.S. team members, however, are encouraged to work on matters outside their primary focus. For example, patent prosecutors are often asked to join teams involved in licensing discussions with other companies, or to support patent-litigation cases. Such cross-discipline opportunities add variety to their jobs and allow those individuals opportunities to work and interact with people they otherwise might not meet. The U.S. team's emphasis on cross-discipline work has the added benefit of keeping them nimble and able to change focus whenever needed to adjust to changes in Huawei's business focus.

Benjamin Wu

Head, Americas IPR Department

Huawei Americas IPR Department is located in Ottawa, Canada. As a successor of Canadian IPR team with Huawei Canada Research Institutes, its major responsibility remains to help Huawei Canada Research Institutes and its partners to protect their innovations by all necessary and proper means, especially by filing patents in multiple jurisdictions. Working along with excellent external patent agents and attorneys, our in-house patent responsible managers dedicate their daily work to patent portfolio value building based on advanced technologies invented by engineers with Huawei Canada Research Institutes and their cooperation partners, including in wireless communications, optical communications, Artificial Intelligence, semi-conductors and other edge technical fields.

As always, Huawei believes virtuous circle of R&D investment and commercial payoff of the innovations helps healthy and sustainable development of technologies in human society. In addition to provide our advanced products and services, Huawei offers to license its valuable Intellectual Properties on a balanced position to its customers and partners to help them to provide better solutions to the societies in Americas. By recognizing the continuous increasing value of Intellectual Properties in Americas, Huawei is willing to put more resources into this area to build IP communities together with agencies, customers, and partners, to make Americas play more and more important roles in IP protection globally. Americas IPR Department expects to play a key role to archive this goal.

Emil Zhang

Head, European IPR Department

In our more than 14 years in Europe since 2008, Huawei's European IPR Department firmly sides with European's industry in R&D activities and advocates to support a future-oriented and mutually beneficial innovation eco-system.

Supporting Huawei's R&D in Europe, which focuses on co-creating cutting-edge technologies with our European partners in key areas (e.g. A.I. automotive, low-carbon, etc.), Huawei's European IPR Department is committed to provide profound legal support to 27 European R&D centers in 14 European countries. We ensure a quicker understanding of the EU rules, better compliance with regulations, and more comprehensive cooperation with EU industry partners in a seamless way.

We are also dedicated to acquiring, maintaining and managing IPR outputs from Huawei's constant investment in Europe, resulting in Huawei's granted patents in 2021 ranked number 1 by the European Patent Office.

Additionally, we are advocating and putting into practice of a balanced and reasonable licensing program to ensure a fair compensation of R&D investment and in the meantime, eliminate business uncertainties for the EU industries as many as possible by sharing our innovations.

One recent license agreement with Nordic Semiconductor, entered into less than half a year without litigation, is a vivid example that Huawei helps European leading companies in eliminating the business risks of its more than 1,300 end user customers, who will now more than willing to cooperate with Nordic. Huawei firmly believes that by sharing our continuous innovation with European industry partners in a reasonable way, we will be able to jointly grow together with the European industry.

David Wang

Head, Asia-Pacific IPR Department

As a newly founded regional division, Huawei Asia Pacific IPR Department reflects Huawei has actively contributed to industrial development in countries and regions where it is active and has dedicated to broaden the innovation landscape in APAC regions. As we continue to leverage our extensive global portfolios and experience locally, Huawei has held a leading position in patent application in Japan, Republic of Korea, Vietnam and India.

To further assist the digital growth of countries in the Asia-Pacific area, we will invest $50 million in the next few years to cultivate 50,000 personnel, in a joint effort to facilitate the development of local industries, talent and IP.

The first year of founding, Asia Pacific IPR Department has acted actively and started substantial patent licensing discussions with many major manufacturers of smartphones, routers, intelligent vehicles, and products in other domains in APAC regions. In 2022, Huawei has entered into a license agreement under its standard essential patents with a major device manufacturer in APAC. In 2021, Huawei also licensed its Wi-Fi 6 patents to Buffalo Inc., Japan's leading provider of networking, storage and memory solutions. Huawei firmly believes that by sharing our continuous innovation with Asia-Pacific industry partners in a reasonable way, we will be able to jointly grow together with the Asian-Pacific industry.

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In the next issue,
we look at the subject of digital opportunity.

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