

The Lords of the Ringtones: will one king rule the technology standards of the future?

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In the below article, I represent my own personal views and not necessarily those of the company I work for. What follows may be contentious to some, so at points I make clear my background to help the reader's understanding of my perspective.

An unexpected journey

In early 2006, I was pulled into a battle, which became but one in a whole series of battles that have since become referred to as the "Smartphone Wars" – which sounds a lot like Star Wars, although the Lord of the Rings would make for a better analogy, where various different interests vie for power or mere survival.

In 2006 I was a newly qualified lawyer, at the law firm Bird & Bird, with a background in Chemistry. It was an exciting time, wondering where my career might lead. In my mind, it was going to be delving into the world of litigating pharmaceutical and chemical patents in private practice. Little did I know that some court pleadings, which landed on my desk one day that year, were going to take me on a most unexpected journey.

I then became introduced to a world of telecoms patents, acronyms and competition law. Needless to say, I had only then a vague idea that my mobile phone talked to others using something called the GSM or UMTS system, and that it had to connect to a base station somewhere. A steep learning curve therefore ensued where it became rapidly apparent the sheer mind-boggling scale of the endeavour that has created the modern mobile communications network. At one point, I was pretty sure aliens must have landed and given us the technology - and this was just in the days of 2G and 3G. Now we are in the era of 5G, which is capable of data speeds 100,000 times greater than 2G in just 30 years. Only computers have seen similar performance gains in the commercial world.

Not even the moon landings in the 1960s and 70s can compare with the mobile communications system for its complexity and collaborative effort to achieve. What is more impressive is that this was done almost entirely through private funding, among competing companies who created technologies that anyone could use through "open standards".

Standards

Standards in the telecommunications sector are complex documents created with the aim of enabling high-performance interoperability between devices. When followed/implemented, these standards allow your mobile phone to communicate with another one on the other side of the globe.

One of the first digital multi-region mobile standards, the European GSM system, now often referred to as simply 2G, is still in widespread global use today. It was developed in the late 1980s and early 1990s, with the first GSM call being made in 1991, in Finland, using a system built partly by the company I now work for, Nokia. Today, in the era of 4G and 5G, you can make not just voice calls but video ones and stream hi-res movies too -

while on the move and at any time. This is all built on standardised technologies, such as the cellular standards mentioned, as well as sophisticated video and audio codecs.

These standardised technologies, however, are built on thousands of individual patented inventions developed by a relatively small number of companies. In mobile telecoms, these standards and technologies are also continually evolving; to enable higher performance and new functionality, founded on new innovations protected by new patent rights.

In the early days of telecommunications, many of these patents were simply cross-licensed or not asserted between companies involved in creating the first generations of mobile communication systems. Each company involved in developing the GSM system also implemented the technology, whether as telecoms operators, vendors or handset manufacturers. Therefore each was exposed to other companies' patent rights. This unspoken truce was not dissimilar to how automotive companies still operate today. The companies could each still profit without licensing their patents to each other, because each had equivalent standardisation R&D costs and so could compete fairly on the price of their goods.

SEPs and FRAND licensing

Nevertheless, to ensure against the risk that patents could be used against one another, a concept arose that those who helped develop the technology and had patents in it (so-called Standard Essential Patents or SEPs) would be asked to commit to license their SEPs on Fair, Reasonable And Non-Discriminatory (FRAND) terms. This was also spurred on by concerns of competition authorities that patents might be used to "hold up" an implementer, for example, by seeking unfairly high or excessive compensation by using them to prevent the use of the standardised technologies.

In the early 2000s, this foresight of FRAND licensing commitments became all too apparent following a shift in the dynamics of the industry. Because the touchstone of "open standards" is that anyone can use them, this accessibility enabled companies like Samsung and later Apple to freely use the technology in their own products, without permission. At this point, neither company had contributed much, if anything, to the standardised technologies they were using - and still today Apple contributes very little to telecoms standards. On the other hand, Samsung has since become an important contributor to the next generation of technologies, as have a number of other Asian and American companies such as Huawei, LG and Qualcomm.

This imbalance of who had contributed technology to the standards and who had not, also creates an imbalance in costs in both the fundamental research necessary to improve standardised technologies and the development of the very standards themselves. Most governments pay very little towards these developments, so the only source of income from standards is either through selling products or services using the standardised technology or through licensing your technology in them (i.e. SEPs). Those companies who do not contribute technology to the standardisation efforts, also do not have to bear these costs, and so are naturally better positioned than those companies that do.

This imbalance is naturally unfair and so led to those companies who had contributed technology to seek licences and royalties for their patents from those who had not. From a competition perspective, this helps balance the books on the price of a final product or service, so that the company who pays for the R&D can rely on payments from those who do not.

The problem was that some companies' perspective of what was "fair" differed, sometimes quite significantly, from others. In the early 2000s, this was considered functionally an issue of either patent and/or contract law. The question came down to fundamentally, what was FRAND? And because patents were the key to licensing, it also came down to whether or when a standards essential patent holder could seek an injunction to prevent

infringement of its patent rights. The fights then were predominantly between US patent holding companies against European implementing ones, such as Nokia who was then the largest mobile phone manufacturer in the world.

The start of the journey

The pleadings that had been deposited on my desk took these commercial disputes to a whole new level, but not because it involved a European company against a Korean one.

In 2005, our client Ericsson had been in lengthy discussions with Samsung over a licence. Samsung then was a relatively new player, but was rapidly becoming one of the largest mobile handset manufacturers in the world. Its exposure to the underlying patents in the standards it was using was increasingly significant and it had everything to play for. As no agreement could be reached on a licence, Ericsson had brought patent litigation proceedings against Samsung in Germany, the Netherlands, UK and USA. This may seem a lot of jurisdictions, but this was not unexpected. In response, Samsung had found a few of its own patents to counter Ericsson. This was not a surprise either, nor was its claim that Ericsson had not offered it a licence that was FRAND, in accordance to its licensing commitment. What was a surprise was that Samsung had made a competition law complaint against Ericsson as well. This was a first.

Since then competition law complaints have unfortunately become the norm; the go-to sledgehammer of a standards implementer to create leverage against a patent owner.

After a year or so of fighting, both companies settled their differences before any of the substantive issues got decided in court. This was also usual.

Despite many other commercial battles over FRAND licensing in the courts around the world involving numerous companies, it took another 5 years before any court eventually got to consider what was a FRAND licence. Back then, most parties understood that litigation was merely a means to an end, which was to settle a negotiated licence between themselves under terms of confidentiality.

In the years that followed, the battles got bigger, encompassed Asia, and eventually brought government regulators, policy makers and competition authorities from all over the world into the fray. However, their involvement - whether innocent or not - may have more to do with the ulterior motives of a few than simply helping settle commercial licensing disputes.

Today, it is not just mobile communication or media businesses that feel they have a say in what is FRAND but also digital platforms, automotive manufacturers and other companies developing products for the so-called “Internet of Things”. Together this has led to a cacophony of voices; sometimes with well-reasoned and balanced positions, but often with agendas that are poorly reasoned, imbalanced and focussed on self -interested, short-term goals. Unfortunately, the imbalanced voices often come from those with the biggest pockets and loudest voices.

In recent years, a lot of clarity has been provided by the courts on what is “FRAND” behaviour and what constitutes a FRAND licence. Most courts, especially those in Europe, have understood the long-term value and importance of SEPs and balanced this with the potential for abuse. The most recognised and accepted judgment in this area came from the Court of Justice of the European Union in a case involving two Chinese companies: Huawei and ZTE¹.

Nevertheless, new apparent issues keep arising with the licensing of SEPs – despite numerous mutually supporting court decisions from around the world and over 20 years of licensing SEPs across the telecoms industry and thousands of amicably agreed licences. These “problems” get regulators and competition authorities very excited, but often for

¹ *Huawei v ZTE* [2015] CJEU Case C-170/13

very little reason other than that they are persuaded by frequently self-serving rhetoric peddled by a handful of companies through various mouth pieces, for which other companies all too often fall for as well, rather than real-world evidence on standards, patents and their licensing.

This may come across quite strongly, but I say this having had the fortune to work on both sides of the issues, from both a patent holder's perspective and a standards implementer's one – and having spent more of my career attacking patents than enforcing them. Because of this, I believe/hope I have a very balanced view of both the long-term importance of patent rights, as well as the dangers of them when they are abused. I have also advised both large and small companies in this area and in various sectors, so I am equally sensitive to their respective concerns. However, what I am seeing at play is concerning and worrying, and it is about time people woke up to it. Failing to do so may have consequences far beyond the apparent simplicity of helping short-term profit margins.

The dwarves

Today, instead of litigating patent disputes, I now spend my days, as part of Nokia's IPR Policy team, helping to preserve the value of SEP licensing by countering the current anti-SEP rhetoric. It is a fight I truly believe in.

If we were to take the Lord of the Rings narrative, Nokia is one of the dwarves in this saga. I do not mean to infer that it is little in size. (Nokia employs some 90,000 people and operates in most of the countries in the world.) But rather because its engineers mine the modern-day equivalent of gold: innovation. Each year Nokia pumps nearly 20% of its total revenue (i.e. around 4 billion euros) back into R&D. This compares, for example, to less than 5% for Apple (excluding the last couple of years). Through this expenditure Nokia helps research and develop the sophisticated systems and products that allow your mobile phone to continually get better and faster services. Much of this expenditure goes into developing open standards, thereby opening up Nokia's technology for others to use. All Nokia asks in return is for some to help pay towards these developments by taking licences for its technologies.

Nokia is not the only company that operates this way. There are other innovative "dwarves" such as Ericsson, Qualcomm, Orange and some others. However, there are very few of them, compared to the numbers of organisations that freely use their innovations.

The cost of gold

Unfortunately, complaints are made against the dwarves about their licensing practices. In reality, most of these complaints can be distilled into issues over the cost of gold, i.e. a licence to use their innovations incorporated into the cellular 3G, 4G and 5G standards, whether in mobile phones or cars. But one has to wonder whether there is something more to this than meets the eye. Is there a Wormtongue² in the background spreading fear and deception?

In the mobile phone sector, the common practice has been for each patent owner to license bilaterally, which makes it difficult to gauge exactly what the total licensing cost to a user is for the cellular standardised technologies in their mobile phones.

However, in the automotive sector, there is a patent pool covering the use of the 2G, 3G and 4G standards in cars. This pool includes the majority of the relevant patent holders and licences, as a package, the use of their patents in these standards in cars. To use all of the standards, the royalty requested is just \$15³.

² A character from the Lord of the Rings, by JRR Tolkien, see: https://en.wikipedia.org/wiki/Gr%C3%ADma_Wormtongue

³ Avanci patent pool: <https://www.avanci.com/marketplace/#li-pricing>

Therefore, when you buy a licensed car you are indirectly paying, at least in part, towards this \$15 fee to use these technologies. If you ask yourself honestly, does this sound too much? I suspect the answer is very likely “No”. Note that this is a one-off payment. It may be less than one wash of your car, but encompasses decades worth of collective effort of tens of companies and their thousands of inventions to give you continually improving data speeds and quality. If you ask me personally, it is probably too little, especially to keep incentives to develop new and even more advanced connectivity technologies in the automotive space. It is certainly far less than what most car companies charge their customers for this technology.

Unfortunately, this thinking is rarely in the minds of many car companies. Instead of taking a licence many are actively trying to avoid taking one, with only short-term interests in mind, and so pay nothing. Numerous arguments are made as avoidance tactics. One is that their suppliers should take a licence - not them. However, when you ask their suppliers to do so, the suppliers say either “speak to our suppliers” (e.g. their component suppliers) or “it is too much, my company cannot afford it”. Of course, the reason they cannot afford it is that car companies push their supplier prices down so low that their suppliers are left with very little profit margin in their products. Plus, neither the car company nor its suppliers seem to take the costs of licensing into account in their product prices, or so they claim; despite having incorporated the technology in their products for over a decade.

Sadly, the long-term consequences for the automotive sector of this short-term thinking are potentially significant. The reality is that only a few companies, such as Ericsson, Nokia and Qualcomm, have the expertise car companies need to develop the connected technologies necessary to create certain safety and other features necessary for future automated, driverless cars. Plus, technical standards are also becoming increasingly important in other areas of car development. So how car companies deal with one community may make another community more wary in the future.

On a certain level, the short-sightedness of car companies might be viewed as understandable - if the costs were really high. However, at \$15 compared to the cost of a car it would seem somewhat insignificant given the importance that car companies now place on cellular technologies being included in their cars, especially when car companies can use them to create hundreds and even thousands of dollars worth of additional revenue and cost savings per car (e.g. through vehicle diagnostics, servicing, navigation and traffic tools, updates, user remote control features, etc)⁴.

What is really at play remains opaque, but perhaps the ring bearers may have more to do with it than meets the eye.

The ring bearers

In this epic tale, the car companies are but a side-story compared to the two other forces at play: the large digital platforms and the rise of China. Both these forces have a different plan, each with its own interests and objectives. I will leave it to you to figure out which characters they may each represent, but each certainly has a ring of its own.

Each now represent probably the most powerful commercial forces in the world. Unfortunately, both seem inclined towards devaluing the patented innovations behind 3G, 4G and 5G to achieve their respective goals. While their methods often differ, their objective is ironically similar: control.

The digital platforms

⁴ See: “*The Value of Standardized Technology to Connected Cars*” by Sunil Arya, GRUR International, Vol 69, Issue 4, April 2020, p. 365-379; and “*The Value of Mobile Connectivity in the Automotive Industry*” by Simon-Kucher & Partners.

The big digital platforms (e.g. Apple, Google etc.) come from a position of acquiring market dominance and so control. Open standards represent a threat instead of an opportunity. These companies have such significant resources that only by collaborating together can other companies realistically compete with them. Open standards and patents together create the framework to enable this. No one digital platform can realistically compete with this collaboration, so long as enough companies remain willing to collaborate and develop high-performance technical standards.

As noted previously, many of the companies that contribute their time and resources to standards development also depend on revenue from patent rights to justify that expenditure. If you take that revenue away, you also take away the key incentive for those companies to collaborate. Therefore, by strangling the value of licences you can kill or stall your threat, and create new opportunities for yourself.

Some digital platforms have been nothing but ingenious in the many ways they have tried to attack the value of patents. One such attack has been to claim that the patented technology should only be valued based on something called the Smallest Saleable Patent Practising Unit, or SSPPU.

It is a bit of a mouthful, but in essence it is a concept that licensing must be based on the value of a hypothetical component which implements the standard, e.g. a baseband chip (though this actually only implements part of the 2G/3G/4G standards). It is equivalent to basing the value of the copyright in a book to the price of its paper and binding while ignoring the author's skill in writing it. This is because the price of the components rarely reflects the value of the IPR in them, but mainly just the raw materials and processes for making the component. Plus, identifying what is and is not the SSPPU is often impossible, especially where a patent claim may only be infringed through the interactions of a mix of different hardware and software components – and there may be hundreds or thousands of patents being licensed under the same portfolio licence each with their own patent claim scopes covering different aspects of an end product.

The idea also ignores the commercial realities of licensing, which is based on the value of the end use of the technology and represented in many ways in a licence (e.g. as a percentage of the end product, a per unit price or upfront lump sum payments). But that is not the point of this concept. Its purpose is about obfuscation, devaluation and re-focusing of licensing higher up in the supply chain.

A component chip may be sold for around \$15. Unsurprisingly, a component supplier who sells at this price cannot accommodate the current cost of licensing the IPR in the component. If it did so, it would immediately be at a massive cost disadvantage to its competitor. Only someone close to the eventual consumer can realistically accommodate for such IPR costs in its price of goods and so pass them on directly to the consumer. They are also far better placed to realise the value themselves from the sale of standardised end products or services (e.g. music/video streaming, apps etc).

The SSPPU valuation concept has been dismissed as the basis of valuing an SEP license by courts around the world, yet it keeps being brought up in front of regulators, and others less familiar with these issues, as though it were gospel truth.

In the more recent automotive sector debate mentioned above, the SSPPU idea has now morphed into a supply level issue. So the car companies are now playing the same game as the big digital platforms, or perhaps just being puppets at the end of invisible strings.

Of course, the digital platforms do not stop there. Over the years, in some form or another, they have brought competition complaints in courts or instigated them through competition authorities – nearly all of which are either dismissed or go nowhere (e.g. *FTC v Qualcomm*

and *Apple v Qualcomm* respectively⁵). While at first glance these may seem like legitimate complaints, underlying them is invariably the ulterior objective of devaluing standards.

In 2015, they also managed to change the IPR rules in the IEEE. The IEEE is a well-recognised standards development body, that is responsible for developing a number of communication standards. One of which is 802.11 – more commonly known as WiFi. The rule changes were pushed through a closed committee, the majority of whose members had links directly or indirectly to the big digital platforms or ‘their friends’.

One of the changes sought to capture the SSPPU idea mentioned above and another sought to further limit the ability of patent holders to seek an injunction for their patents. This went beyond the, already generally accepted, limitations on obtaining injunctions for FRAND encumbered patents. These recognised limitations are that a company holding such an SEP, who has made a FRAND commitment, has to first prove to a court, before it can seek an injunction, that either the patent infringer is unwilling to take a licence or that it has rejected an offer from the patent holder that is FRAND¹. Unlike for other types of patents, injunctions for SEPs are rare, but they should be available - otherwise how else can a patent holder ever ensure settlement of a licence?

Similar attempts were also made in numerous other standards development bodies, but fortunately with limited success. However, this has not stopped further attempts being made in different guises.

One recently has been the development of standards, which are described as open and royalty-free, but in reality can be quite the opposite. Two examples of this are AV1 and Zigbee. AV1 is a “royalty-free” video codec promulgated by an organisation called the Alliance for Open Media (AOM). AV1 is based on a former Google video codec and AOM was founded by a number of digital platforms⁶. It is intended to be a competitor to video standards developed internationally in ISO and the ITU. However, AV1 is not necessarily royalty-free. Firstly, it very likely uses patented technologies of other companies who did not allow AOM to do so. Therefore users of it risk patent claims from these companies, who will not have made any licensing commitments – unlike in ISO and the ITU. Further, if you use the technology and want a licence from the AV1 developers, it would seem you have to license your IPR back to them on a royalty-free basis. It is one thing to ask those who contribute technology to a standard to choose to agree to royalty-free terms; it is quite another to seek to compel users of a standard to do the same.

A similar “royalty-free” licensing back framework is now also used in Zigbee, a standardised technology for low power IoT devices, that has recently gained the backing of the big digital platforms⁷.

Needless to say, this kind of forced royalty-free licensing back of IPRs from users is more likely to benefit the big digital platforms in the long run than anyone else. So not surprisingly the platforms are working hard to make sure their technologies displace all others.

Ironically, the methods used by digital platforms to weaken open standardisation are probably helping China in the long run more than themselves and their own countries. This is because most of their targets are companies in their own countries or their allies, and

⁵ *FTC v Qualcomm Inc* [2020], Court of Appeals, 9th Circuit, No.19-16122 – first filed by FTC in Northern District of California on 17 Jan 2017; *Apple v Qualcomm* competition law complaint filed by Apple in Southern District of California on 20 Jan 2017 - just 3 days after the FTC’s complaint based on similar grounds. A coincidence?

⁶ See: <http://aomedia.org/membership/members/> and <http://aomedia.org/license/patent-license/>

⁷ See: <https://zigbeealliance.org/about/board-officers/> and <https://zigbeealliance.org/about/governing-documents-ipr/>

because while they may see open standards as a commercial “threat” their businesses rely heavily on the use of them.

China

Unlike the digital platforms, China and its corporations have mostly thrown themselves fully behind open standards development. Along with Nokia, they now represent some of the largest contributors to the development of 5G standards. Whether you see this as an opportunity or threat or a bit of both probably depends a lot on your perspective. Nevertheless, a lot of money, time and investment has poured in from China into standards that are open for everyone to use. In many ways, this has benefited consumers. Also, one Chinese company, Huawei, now has one of the larger holdings of self-disclosed SEPs⁸.

On the other hand, this investment and focus has come to the detriment of North American and European companies, many of whom have not been able to rely on significant state subsidies and grants. This lack of relative support has meant that Chinese companies have been able to sell their products cheaper and yet at the same time increase their R&D spend. For America and Europe, the last couple of decades has led to a period of survival of the fittest and a significant consolidation of telecom vendors. Today there is no Alcatel-Lucent, Motorola or Nortel, and Blackberry is now but a ghost of itself. Neither Ericsson nor Nokia sells mobile phones anymore and Siemens has more or less exited the market entirely.

Some raise concerns about this increasing dominance of China in the mobile communications market, which has led to questioning of China’s motives.

Irrespective of its motives, there has nevertheless been a clear interest in China⁹ to protect its own interests and that of its companies beyond what in the West might be considered “fair” competition. It may come in many forms, but in the standard development sphere, it comes down to the devaluation of IPR (directly or indirectly), especially when that IPR belongs to a foreign company. This has a number of benefits. It helps Chinese companies short-term profit lines over those of foreign companies, and in the long-run weakens foreign companies’ ability to re-invest into R&D and further standards development. This pushes more and more expertise, know-how and money into China, and gives China more influence and power over the direction of future standards work.

Having said that, it is not all in one direction in China. Because the country is increasingly having to develop new technologies to keep up growth, rather than simply copy and sometimes improve upon existing ones, the importance of IPR and patents is increasing there. Equally, some companies are relying more on their own IPR over other local competitors. This increasing respect for IPR in China will hopefully lead to a healthier dynamic.

Also, in the last few years, governments around the world have finally woken up to the importance of open standards to their own economies and security. This has led to a re-focusing of investment towards communications standards in North America, Europe and Japan. The question really is whether this may all be a little too late.

Failing to recognise gold’s true value

In a world that seems to distrust patents and which fails to see the extraordinarily integral part they play in technological development and competition and the sharing of ideas and technologies through them, which enable new players to challenge incumbents¹⁰, there is a

⁸ Some standard development organisations ask their members to disclose their patents that they believe may be or may become essential for using a standard.

⁹ When I say “China”, this is in a nebulous way, as it is not always clear how much is directed from the top of China’s government, which has indicated strong support of IPRs. Accordingly, it represents the actions of some Chinese companies, but not others, and some Chinese authorities, but not others, whose collective efforts have the described consequences.

¹⁰ See: “*How IP Rights Keep Markets Free*”, Hudson Institute (June 2021) by J.M. Barnett.

risk to their potential to drive the future of both innovation and the direction of standards development.

Some may see this as a good thing. However, that would be to misunderstand the dynamics at play. No patents would mean a mindset of closed technologies - protected as trade secrets within a guarded fortress - controlled by a few incumbents; leading to correspondingly less interoperability of products and systems than we enjoy now.

Some sell the idea that “royalty-free” standards are the way forward. After all there have been some huge successes (e.g. Bluetooth). This is very true, but not in fields requiring significant upfront R&D investments, such as in telecommunications. Weak patent rights or forced “royalty-free” licensing leads invariably to the same place – no returns on innovation and so reduced incentives to invest into advanced technology for open standards development. It also means that the only way for companies to profit would be to sell products at a higher profit margin. To do this they will need to have greater product differentiation, as standards tend to commoditise the products using them, as they are open to a high-level of competition. To profit, companies will therefore need to shift to either solely closed, proprietary technologies or bare minimum standards that are necessary to meet an industry’s particular common needs, but no more. Why sink large amounts of money into a standard that you cannot profit adequately from?

Weak patent rights also mean there would be no interest in companies disclosing their technologies to the world in exchange for a limited term (usually 20 years) of exclusivity to them. This in turn means less knowledge diversity, more fragmentation and, in the end, less technology development.

Of course, this closed wall garden approach typically only benefits very large companies who have the resources to make their own ecosystem work. Think of Apple’s iOS and Google’s Android - which have hardly evolved since they became the only real alternatives for most people - and you can see how this all benefits the big digital platforms. It does not necessarily benefit the consumer. While at first there may be stiff competition to be the market leader, once only a few remain, they can sit back assured of customers, as consumers may have little choice but to use their technologies in a fragmented market controlled by a few.

Over time this invariably leads to low grade and over-priced products. You can see this playing out in the recent court proceedings brought by App developers against Apple’s and Google’s App stores.¹¹ These App stores, in essence, tax app developers for simply offering an App through their website – and the only choice App developers really have is between Apple or Google. And this tax is up to 30% of whatever the App developer charges for its Apps, which can include purchases made in the Apps themselves. Yet Google and Apple take issue with the relatively low cost of licensing other companies’ technologies, and even the very open connectivity technologies that they rely on for their App “marketplaces” to work.

Journey’s end

Whether it will be the ring bearers or the dwarves and human consumers who will ultimately triumph in this tale will depend on governments and companies putting their short-term interests aside for the long-term benefit of society as a whole.

There is a lot at play. It is estimated that 4.7% of global GDP is generated from mobile technologies and services and by 2024 mobile telecommunications will support a market worth nearly \$5 trillion, up from around \$4 trillion in 2019¹². This is because the connectivity technologies supported by open standards are expected to be adopted by many

¹¹ Epic Games filed lawsuits in 2020 and 2021 against Apple and Google in the UK, USA and elsewhere

¹² GSMA report: “*The Mobile Economy 2020*”

new industries. The automotive sector is already well on its way, but others such as agriculture, healthcare and manufacturing are all expected to start relying on these technologies in the medium term.

But what the next generation of technologies is going to enable will depend a lot on the value placed on the patents and innovations behind the current generation. Governments and companies need to take this into account before jumping on the bandwagon of pushing for lower royalties or inadvertently supporting new means of avoiding taking licences. While it is tempting to do so, to maximise short-term goals and profits, this may impact their long-term interests. It is only helping the aims of those powerful enough to become the remaining few overlords and controllers of these vital technologies.

It is only through collaborative, global standards development that monopolies and oligopolies in communication technologies can be avoided.

There are complexities, as there is no one-size-fits all approach to licensing standardised technologies, but these can be resolved if industries work in good faith towards finding a solution - with long-term interests in mind. After all, no healthcare company, farmer or car company is going to be able to develop the connectivity technologies they want, so why go to battle with the very companies who are offering to provide their expertise and technologies – and who have voluntarily agreed to do so on a reasonable basis? Equally, why support the companies and other organisations who tightly control their technologies and who may not have your long-term interests in mind, but rather their own and who dress up dragons and golums in sheep clothing and sheep in dragon scales?

With a better understanding of open standards and patents, industries and companies will be better placed to sort out any licensing issues between themselves, providing they each consider their long-term interests and see the benefits of open collaboration - which means seeing behind the words of the Wormtongues of this world. Accordingly, more clear and accurate guidance and education of the licensing of SEPs is essential, especially as more and more industries start using standardised technologies. In this regard, if you would like to understand the licensing of SEPs better I would point you to the following document, which I had the privilege to help create: *“Principles and guidance for licensing [SEPs] in 5G and the [IoT], including the Industrial Internet”*¹³, which was adopted by a number of companies who both implement and licence the standards they develop.

Equally, the courts in Germany, India, Japan, the Netherlands, UK, USA, and even to some degree China, all agree on many of the key principles for FRAND SEP licensing – much of which is set out in the above “Principles and guidance” document. Courts are led by the evidence and should be trusted to do the right thing without political influence or bias. Fundamentally, the issues boil down to enabling two parties to find a reasonable commercial solution to use a technology. The very thing mediators, arbitrators and courts are best placed to do.

For my part, I hope governments and companies wake up and start looking beyond the sheep to see their hidden teeth. If they (you) do, then we may well end this journey with a clear and better-informed future of open, global, collaboratively created and shared technologies available to all. Instead of a fragmented, closed, over-priced, low quality, slowly evolving and tightly controlled collection of technologies held by a few. Perhaps then my journey will conclude with a happy ending, and not even JRR Tolkien could have wished for a better end to this saga.

¹³ CEN/CENELEC Workshop Agreement (CWA17431), June 2019: <https://www.iptalks.eu/wp-content/uploads/2019/09/CWA17431.pdf>