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WHAT WOULD THE COVID-19 LOCKDOWN HAVE BEEN LIKE DECADES AGO?

A TECHNOLOGY PERSPECTIVE
ON VIDEO CODECS

JUNE 23RD
AVAILABLE STARTING FROM 10:00 AM CET
ONLINE TALK

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WHAT THE COVID-19 LOCKDOWN WOULD HAVE BEEN LIKE DECADES AGO?

A TECHNOLOGY PERSPECTIVE ON VIDEO-CODECS

Over 500 professionals watched on June 23rd the Online Talk on “**What would the Covid-19 lockdown have been like decades ago? A technology perspective on video codecs**”.

The Covid-19 global shutdown has highlighted the importance of video for **communication and entertainment** for those locked down at home. In fact, thanks to videoconferencing allowing business to continue and to maintain family social relationships, and streaming services that let us watch movies and other entertainment, the hours spent at home have been more bearable. **Can you imagine what life would have been like without these modern video codecs and the services they enable?**

Video codecs have a rich history of innovation that produced these capabilities. Licensing revenue funded the R&D investments that produced these codecs and **fund future codec innovations**. In this context, patent pools play a critical role in rewarding the innovators and providing an effective mechanism for implementers to efficiently acquire the rights to deploy the **technology**.

The Talk reviews the recent history of codec innovation and details how the patent system and patent pools help fund these efforts. **Presented as a series of interviews from various stakeholders**, it describes how pools are formed, the due diligence required to be aligned and in full compliance with all the applicable rules and regulations, such as the competition law regulations, the lifecycle of the pool from the start of licensing to potential enforcement actions. It presents a balanced view on how patent pools foster innovation and create a level playing field for both licensors and licensees in the video-codec industry.

You could find below a summary of what have been presented by all the distinguished speakers who attended the Talk.

THE VALUE OF INTELLECTUAL PROPERTY

Sebastiano Toffaletti

Secretary General of the European Digital SME Alliance

Sebastiano Toffaletti from the European Digital SME Alliance, the association of more than 20.000 small and medium sized ICT enterprises in Europe, highlighted the **importance of open innovation and IPR protection to foster technical progress**.

Today modern digital technologies like Wi-Fi, Bluetooth, or the mobile connectivity like 4G or 5G require different inventions belonging to different parties to integrate and work together. They are the result of the combined effort from a variety of small and large companies, as well as private and public ones.

All of these technologies embed intellectual property rights, which make possible for the inventors to **disclose their own invention in a way that protects its value and through licensing revenues generate income to foster further innovation.**

THE DEVELOPMENT OF VIDEO-CODEC TECHNOLOGIES OVER TIME

Leonardo Chiariglione

Co-founder of MPEG

Leonardo Chiariglione, founder and former chairman of the Moving Pictures Expert Group (MPEG) is one of the true pioneers of digital video compression. He had a vision and succeeded in carrying analog television to digital television and then little by little removing the word “tele” and changing the word “vision” into video. All this didn't happen in one day and it is not over yet, but certainly, it is a great achievement.

The role that video communication has played during the Covid-19 lockdown has been incredible because it enabled near-continuous (and much needed) entertainment and, above all, helped sustain the economy via video conferences. Though nearly all worldwide economies have contracted during the pandemic, without question, had video not been available, those numbers would have been much worse.

As chairman of MPEG for over 35 years, Leonardo Chiariglione **has seen the origin of many video codecs and agrees that these technologies are commonly made by building blocks**; describing the latest video codec technologies, he explained how **enhancements are added to existing compression structures** to reduce the consumption of streaming video and improve the quality. A very clever combination of state-of-the-art tools combined with innovative solutions.

Leonardo Chiariglione also highlighted the **huge investment in R&D** that has been necessary to create these types of video codecs. Judging from the number of people who attend the latest standardization meetings over the last years and the people who work in the labs, about 1.000 people are usually involved in the creation of a new video codec technology.

SISVEL: A WORLD LEADER IN FOSTERING INNOVATION AND MANAGING INTELLECTUAL PROPERTY

Roberto Dini

Founder of Sisvel

Roberto Dini, founder of Sisvel, talked about **the roots of Sisvel and how its business model evolved over the years**. Founded in 1982, the company's initial mission was to protect the interest and valorize the patent portfolio of its shareholders, who produced TV sets. When production of these consumer electronics moved to the Far East, the original shareholders quit the company and Sisvel became an independent non-practicing entity focused more in fostering the interest of third parties.

In recent times, Sisvel is also very focused in fostering the **creation of patent pools** and managing them. The first patent pool that Sisvel administered more than 20 years ago was the **famous MPEG audio pool**. Today, the company administers around 20 different patent pools in different technological fields like wireless and broadband communications, digital video & display technology, and audio and video coding,

including pools for VP9 and AV1.

The reason why Sisvel entered the patent pool business is because the company strongly believes that **patent pools are pro-competitive systems** that optimizes the interests of licensors and licensees. Also, the European Commission supports the creation of patent pools to avoid royalty stacking.

As an administrator, **Sisvel differs from other patent pool administrators offering a “one size does not fit all” approach**; not all the partners have the same needs and Sisvel offers different business models according to different needs. Another distinguishing point is that **Sisvel’s R&D subsidiary, Sisvel Technology**, has a strong team of engineers and patent attorneys who are very helpful during negotiations with potential licensees and, for example, can explain how a certain patent is essential to the standard and why a license should be acquired to exploit the patent.

Another important factor is that Sisvel is a privately-owned **independent company** and ownership doesn’t include either licensors or licensees in any pool. This makes it simple for pools administered by Sisvel to comply with FRAND as it doesn’t have any interest to force the market and discriminate against licensees.

With offices on three different continents and with about a hundred worldwide employees, Sisvel is often defined as a **pocket multinational**. The company likes to follow the market and to be closer to its partners; also, the licensees are partners with Sisvel and so the company has to understand their local needs.

PATENT POOL: A PRO-COMPETITIVE “ONE STOP SHOP”

Mattia Fogliacco

President of Sisvel International

Mattia Fogliacco, president at Sisvel Group, described in more detail the business model of patent pools; how and why are they formed and the benefits they provide to both patent owners and technology implementers.

Patent pools could be defined as a **“one stop shop” that simplify licensing transactions**. Pools enable the implementers of a specific technology to access the patent rights in that technology owned by various patent owners through one single contractual agreement.

Patent pools generate big market efficiencies. Think about the Wi-Fi technology. There are tens of companies who own patents in the Wi-Fi technology and thousands of implementers who need to take a license. Absent a patent pool, acquiring rights to these technologies would mean tens of thousands of individual bilateral licensing transactions, which are costly and time consuming. In contrast, pools simplify and streamline the contractual process, dramatically decreasing administrative costs and accelerating time to market.

Patent pools enable the funding of innovation. They generate a virtuous circle providing innovators with an economic reward which could be invested in the next generation of technology.

Everybody who owns patents in a specific technology should join a patent pool. This includes leading innovators and implementers who also own relevant patents and want to efficiently access the patents owned by other innovators. Don’t forget about research and

development centers; these companies are focused on doing research and joining a patent pool enables them to license and monetize their R&D. Companies who buy patents on the secondary markets should also join pools; these transactions provide another useful mechanism for inventors to monetize their development efforts.

Considering all these different profiles of participants, what brings them all together is the desired **to achieve a level playing field for technology implementors**. Pools enables all implementors to know that they pay the same royalty for the same technology, **giving a lot of symmetry to the market**.

WHY THE EUROPEAN COMMISSION FAVORS PATENT POOLS

Bowman Heiden

Visiting Scholar at The Hoover Institution, Stanford University and Co-Director at Center for Intellectual Property

Bowman Heiden is a visiting scholar at the Hoover Institution at Stanford University and co-director at the Center for Intellectual Property. He is also a member of the group of experts who advises the European Commission (EC) on Standard-Essential Patent (SEP) licensing and valuation. The group's charter is to look into the future of the Internet of Things, where connectivity is integral to many products and industries, and to help structure a more efficient licensing ecosystem for the required patent rights.

Heiden explained that **the EC encourages patent pools as they help to solve a lot of SEP licensing challenges including transparency on essentiality and more clarity on licensing fees**. Pools also create a one stop shop that streamlines licensing transactions and compensates the inventors who developed the underlying standard.

On the contractual efficiency created by patent pools, Heiden highlighted a recent article on the MPEG Audio and HEVC standards, noting that **the saving in transaction costs created through the pooling effort has been estimated between four and six hundred million dollars**.

Heiden also explained that the EC seeks to foster the adaption of digital standards that allow the market to coalesce on a technology and advance. This includes formal standards sponsored by Standard Setting Organizations like the DVB or MPEG, and technologies like VP9 and AV1 that become de facto standards by market adoption. In both cases, the EC believes that pools improve transaction efficiency and help overcome licensing challenges.

HOW PATENT POOLS WORK WITH STANDARD SETTING ORGANIZATIONS

Carter Eltzroth

Managing Director at Helikon.net and Consultant with Standardization Bodies

Carter Eltzroth, managing director at Helikon.net and a consultant with multiple standardization bodies, described how patent pools work with Standard Setting Organizations (SSOs) and the benefits patent pools provide to the marketplace. SSOs like DVB, MPEG or other standards bodies, bring together technical specialists to agree on technical standards and **ensure the interoperability between different devices, and a broad market adoption for new technology**.

One concern in standard development is that by **holding patents** that are essential to practice a given standard, one or more companies **could prevent the implementation of that standard or making it too costly. To reduce this risk, some standard bodies encourage the early launch of patent pools, which is often called fostering.**

During fostering, companies that hold essential patents meet under the supervision of a patent pool administrator and launch the licensing program, which usually has an aggregate royalty for the new technology lower than sum of the single ones. For SSOs, this is particularly important because an early launch of a patent pool means that the standards can be adopted more quickly.

SSOs see patent pools as a way to reduce royalties, accelerate time to market and improve contractual efficiency. Patent pools offer a one stop shop, which means that the implementer doesn't have to search broadly to find organizations that holds essential patents. The work has already been done by the patent administrator.

Standard bodies consider patent pools part of the life cycle of the standardization process. Work doesn't stop when the specification is agreed, rather, the SSOs can contribute to the standard by ensuring that there is a pool which covers its central parts.

HOW PATENT POOLS HELP LEVERAGE GE'S R&D INVESTMENTS

Patrick Patnode

President at GE Licensing

Patrick Patnode, president of GE Licensing, presented the licensor perspective in participating in a patent pool.

Historically, for the last several decades, GE has invested between three and four billion dollars a year in R&D, resulting in a large portfolio of patented technologies. The primary goal of GE's R&D, whether internally developed or acquired, is to differentiate GE's products in the marketplace and drive better outcomes for its customers.

To accomplish this, **GE works with its business partners to identify safe ways of bringing technology that matters to the world out to new market segments.** This is done on a regular basis, reviewing, packaging, understanding the existing encumbrances or the limitations of the licensing program, and bringing that out to market in various business models.

GE participates in a wide range of pools around the world and across multiple technology disciplines. **The company finds that pools are very efficient and pro-competitive means to take a technology out to the marketplace and making it accessible to the implementers.**

One of the biggest advantages of pools is that they allow an implementer to take a license to the patents held by several different licensors (10, 20 even 50 plus licensors). Negotiating with a large patent holder, depending on the complexity of the transaction, could take years. **Negotiating directly with a patent pool that includes multiple separate licensors would definitely accelerate time to market compared to separately negotiating individual licenses.** If you extrapolate the amount of saved time, the pool is a very easy decision.

PATENT POOL FORMATION AND THE REQUIRED DUE DILIGENCE

Massimo Mancin

IP Strategy Manager at Sisvel

Massimo Mancin, IP strategy manager at Sisvel, and Italian and European patent attorney, explained the technical expertise needed in managing a licensing program.

Creating a patent pool is a complex, expensive, and time-consuming process. You need to get together many parties with different interests, to find the legal frameworks to make everybody happy, or equally unhappy.

The patent pool **requires a combination of legal, business, and technical skills.** Sisvel Technology, the technical branch of the Sisvel Group, provides the technical support throughout all the phases of the licensing programs from formation to litigation.

In the formation phase, Sisvel's experts provide advice and technical guidance to help licensors prepare the technical documents relevant for the patent **evaluation process.** **This is usually performed by independent experts who decide whether a patent is essential to the technology covered by the pool.** If the patent is essential, it's included; if not, it's excluded.

Third party examiners are expensive, but necessary as they are retained arbiters of essentiality; it's a pro-competitive practice. They review the patents and the claim charts submitted by the licensor based on different local patent law. Their decision is binding and ensures that only the essential patents that are relevant for the technology licensed, with no technical alternatives, are in the pool.

During the licensing phase, **Sisvel's technical experts also work with potential licensees to explain how the patents in the pool apply to their technology,** responding to all their questions and challenges. Technical support is also necessary to prepare for litigation, for example, to help **select the best patents to be litigated** and support lawyers during the due diligence process, which assesses the strength and the validity of the patents.

THE EVOLUTIONARY NATURE OF CODEC DEVELOPMENT

Marco Grangetto

Full Professor at Department of Computer Science, University of Torino

Marco Grangetto, director of the PhD program on computer science and professor of image processing and video coding at the University of Turin, talked about the evolutionary nature of codec development.

Grangetto explained that transfer coding from JPEG and predictive coding from MPEG are the two main techniques involved in coding digital images. Most of the innovations that followed are not revolutionary, but rather a collaborative effort of big teams that improve the technology little by little.

When you measure the efficiency of different video compression standards, you may see big jumps - half of the bitrate for the same quality is the usual slogan when a new video coding effort is started. But if you analyze the details of the new coding technology, you will see that **there is no single invention that delivers the big boost.** Rather, it's the consolidated gain from multiple smaller advancements.

Codec development has been evolutionary, not revolutionary. There are no big jumps in the history of video coding, but rather the slow step-by-step race from the very beginning to where we are today. Of course, the technology has evolved but most modern codecs are based on technologies that have existed since the start of image and video processing. Going back to the roots, it is quite easy, and the common roots are always the same; transform coding and prediction with some big improvements.

THE LICENSING PROCESS FROM POOL LAUNCH TO ENFORCEMENT

Daive Ferri

Managing Director at Sisvel Technology

Daive Ferri, managing director at Sisvel Technology, is involved in the licensing activities of the VP9 and the AV1 pools. These programs officially launched only a few months ago (March 2020), though Sisvel announced licensing terms and conditions in March 2019.

Ferri explained that once a program is launched, **the licensing process starts by identifying products or services that incorporate certain technologies**, specifically VP9 and AV1 patents. With the support of its local subsidiary in Japan, China, Europe and the US, Sisvel checks the regional markets and assesses all the products and services that may use these technologies. A **list of prospective licensees** is created and validated by the technical team of Sisvel Technology that run technical analysis on the selected products and services.

Sisvel then starts contacting these companies, with calls to companies with existing contacts or via a formal notice letter to companies without existing contacts. The negotiation process is usually comprised of three steps.

First is when potential licensees seek to understand what Sisvel is offering and appoint the experts that will follow the negotiation process. The second stage is the technical discussion, where Sisvel provides, if requested, technical details like claim charts or other information on patent validity. The final step is the economic discussion. **The duration of the negotiation process may be different, according to the willingness of the licensee**; it may last a month or years.

Regarding the VP9 and AV1 pools, Sisvel has entered stage one with the companies that have a worldwide presence. With some, Sisvel has also entered the second stage, sharing claim charts and starting the technical discussion. Unfortunately, only with a minority of companies, it reached the third step, namely the discussing the economics. By the way, **Sisvel is very pleased to highlight that it already has the first licenses for both the programs.**

Sisvel has been in the licensing market for almost 40 years. Its principles are based on discussion, negotiation, and licensing. The company aims to create value for patent owners, but also for implementers. Of course, it's not always possible to reach an agreement and in this case, **Sisvel must enforce the patents to protect not only the interests of the patent owners, but also the interests of all the willing licensees that took the license.**

THE ROLE OF ENFORCEMENT TO AVOID FREE RIDING BEHAVIORS

Sir Robin Jacob

Hugh Laddie Chair of Intellectual Property Law, University College of London

Sir Robin Jacob, Hugh Laddie Chair of Intellectual Property Law at the University College London, explained the strategies that technology implementers deploy to avoid taking a license and the need for enforcement actions. Jacob explained that licensors don't like paying and when they do, they want to pay as late as possible, as little as possible. So, **implementers adopt strategies to avoid or delay payments and if you want to stop them, you have to go to court.**

A lot of people criticize companies who sue, but **enforcement actions are necessary to level the playing field for all implementers.** It is only fair when the implementers who aren't paying are made to pay. Otherwise, they are not competing on a level playing field with the other implementers who are correctly paying.

For additional information, please contact: press@sisvel.com

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