ECIS event: 30 Years with ECIS

Our role in the interoperability debate through the eras of Mainframe, Client Server and Cloud

3 December 2019

This event celebrated the 30th anniversary of ECIS, reflecting on the lessons we have learned and the future challenges for interoperability. ECIS Chairman Thomas Vinje opened the event and Jonathan Sage, Chairman of the ECIS Public Affairs Group moderated the panel. Our panel of speakers included perspectives from enforcement, industry, policy, and research. A summary of the presentations is below.

Thomas Vinje – Opening Remarks

Chairman of ECIS, Partner and Co-Chair of the Global Antitrust Group at Clifford Chance

Europe's story of interoperability began in the age of mainframe computers, which was dominated by IBM. Fundamental to interoperability is that those who dominate a particular IT market have an incentive to preserve and extend their dominance by limiting interoperability and thereby frustrating competition.

In the 1970s, the US Department of Justice pursued an antitrust case against IBM which involved, in part, interoperability issues. Not long before the case was closed, DG COMP, then DG IV, initiated its own antitrust case against IBM, alleging, *inter alia*¸ the infringement of Article 102 of the EC Treaty by hindering interoperability. IBM entered into an Undertaking with the European Commission ("**EC**") obligating it, *inter alia*, to provide interface information necessary to achieve interoperability with its mainframe products. This Undertaking remained in place until 1995, and some allege that it helped to facilitate the rise of distributed computing.

There is another body of law quite directly related to interoperability: intellectual property ("**IP**") law. Into the 1980s there was no global clarity on the nature and source of IP protection for computer programs. Some supported copyright law as the appropriate source of protection, some supported patent, and some supported a *sui generis* form of IP law. During the second half of the 1980s a war was fought between IBM and Fujitsu over the protection for software, and whether Fujitsu had infringed IBM's rights.

In early 1989, a key moment arrived in this IP-related interoperability war – sometimes called the "Softwars," when the EC proposed its Software Copyright Directive, eventually generating the biggest legislative battle ever fought worldwide on IP protection for software, focused squarely on interoperability. The scope of protection under copyright for interfaces and the permissibility of reverse engineering necessary to achieve interoperability were front and centre.

ECIS was founded in Paris in September 1989, by a considerable number of IT companies at Bull Headquarters in Paris, and its first Chairman was Emmanuel DeRobien. ECIS' members then included Fujitsu, NCR, Unisys, Bull, Olivetti, Nokia and about 50 other companies and organisations. All had a common interest in fighting for an interoperability-friendly European software protection law.

ECIS aligned itself against a group led by IBM, including Microsoft, Apple and other leading IT companies. The Softwars surrounding the legislative process for the Software Directive were intense and bloody, and Philippe Wacker, then Secretary General of ECIS, was among ECIS' main warriors. A compromise was reached in 1990 accommodating ECIS' interoperability concerns, which despite being threatened on occasion since its adoption, has stood the test of time.

During the 1990s, ECIS successfully fought several battles to preserve the balance found in the Software Directive, including in subsequent EC Directives such as the Database Directive, the Information Society Copyright Directive, and the WIPO Copyright Treaty, adopted in 1996.

The dramatic transformation of the mainframe IT market into the world of distributed computing, came to be dominated by Microsoft. Microsoft's incentives as the dominant firm in the IT industry were to frustrate interoperability in ways that preserved and extended its dominance. Rather ironically, the company ECIS was founded to fight, IBM, realized that its interests now lay in promoting interoperability, and IBM became and remains among ECIS' more prominent members.

Microsoft frustrated interoperability between its monopoly Windows PC operating system and server operating systems pioneered by companies like Novell and Sun Microsystems. This led to what is often regarded as the mother of all antitrust cases, and ECIS played a significant role in its successful resolution, intervening to support the EC in the Luxembourg court proceedings. Thomas Kramler, whom we are honoured to have with us here today, played an instrumental role as a DG COMP official in that case.

Since the successful resolution of the *Microsoft* case in 2007, ECIS has continued to focus on various issues related to interoperability. Ten years ago, on the 20th anniversary of ECIS, ECIS' former Chairman Simon Adwe said "much has changed since the founding of ECIS, except what ECIS stands for." This still rings true today. For the past 30 years, ECIS has been fighting consistently for the same principles: that there should be vigorous competition on the merits, and a diversity of consumer choice.

ECIS has evolved with the IT industry, and hence our focus has now moved largely to interoperability in cloud, and all that accompanies it. This impacts a wide range of areas within the IT sector, including cybersecurity, privacy and artificial intelligence, and ECIS has adopted positions on a host of issues, from extra-contractual liabilities for the internet of things ("**IoT**"), to the 2019 Cybersecurity Act, to public procurement.

ECIS is still active on a number of fronts, and in recent years has responded to Commission consultations on ICT standards and horizontal co-operation agreements, held events on privacy, cybersecurity, cloud, AI, and IoT, and published papers delving deep into issues such as portability in cloud computing, and the importance of interoperability in cybersecurity and cloud.

I would like to thank those who have been deeply involved in ECIS activities over the years, its members, and all those who have supported ECIS. I would not be the lawyer, nor the person I have become today without the phenomenal privilege of having represented and evolved with ECIS over the past thirty years.

Thomas Kramler
Head of Unit, E-commerce and Data Economy, DG Competition, European Commission

Microsoft was a flagship case and has taught us lessons for the future: what can and cannot be done with regard to giving access to interoperability information in the framework of EU antitrust law. The reference framework on interoperability in antitrust is undoubtedly *Microsoft*. It was not an easy case and showed that the burden for intervention for antitrust laws to order the sharing of interoperability information with a competitor is high. Antitrust authorities must show indispensability of the information to compete, which makes it difficult to take such a case under competition law.

This case turned exclusively on the issue of intraplatform competition – competition on the Microsoft platform. This raises questions regarding how it may be extrapolated to an interplatform case.

The European Commission ("**EC**") needed to define the scope of the information necessary to facilitate interoperability. This sets a very high bar and, in this case, the EC was "lucky" that the intellectual property which Microsoft held was weak.

It took a long time to get the remedy up and running in this case and Sun Microsystems and Novell did not have the commercial strength to survive through until the remedy was working. The remedy was ultimately successful but this was influenced by the market conditions and the open source nature of the remaining competitor (Samba).

Microsoft initially argued that this case was the "attack of the clones." This turned out to be merely a smokescreen. There was a lot of scope for innovation; merely giving access to the "pipes" did not limit innovation on the service side.

The hurdle in such a case is that it is necessary to have an authority which is ready to strictly enforce its remedies. The EC was willing to do this. In many ways, this was one of the first EC FRAND [fair, reasonable, and non-discriminatory terms] cases.

What was imperative in this case was that the remedy was goal oriented, which is very useful in enforcement actions. The eventual change of attitude in Microsoft also contributed to the success of the remedy. A company which once said "open source was a cancer," came to embrace open source and contributed code to the open source community.

This case demonstrated that it is possible, but very difficult to use antitrust to provide interoperability and access to interoperability information. *Microsoft* took a long time to bear fruit on the market. Competition enforcement should not be the first avenue, but rather a backstop.

Interoperability and interoperability standards are essential to the internet of things. Without interoperability and standards in file formats and data, data portability is not going to work. Take for example, Art. 20 of GDPR, Art 6 of the Regulation on the free-flow of non-personal data, and the PSD2 Regulation – some are lacking in accompanying interoperability standards. Interoperability is essential in the data economy.

Interoperability tends to be more about intra- rather than interplatform competition. Antitrust case law only provides us with the tools for this type of vertical competition, but not horizontal competition.

Jorge Padilla
Senior Managing Director and Head of Compass Lexecon Europe
Dr. Padilla made his presentation on behalf of the Toulouse School of Economics.

The theories surrounding the economics of compatibility and interoperability have evolved over time. With system goods, composed of a base product and a component, you can have compatibility, incompatibility and bundling, with four combinations of products. From an economics perspective, incompatibility and bundling decisions have similar implications for market outcomes and welfare.

Prior to 2004, the prevailing theory on the economics of compatibility was based on a paper by Matutes and Regibeau (1988). Focusing on inter-platform competition, they argued that in a duopoly, where there are no network externalities, firms prefer full compatibility because it relaxes competition and leads to higher prices. However, the paper concluded that compatibility is not always bad for consumers, as it gives rise to greater variety, but may lead to higher prices.

Katz and Shapiro (1986) had previously argued that, while in the short-term compatibility is not beneficial as it may lead to higher prices, it may be consumer welfare enhancing in the long-term, as the threat of tipping is reduced. That is, it may prevent one firm from gaining control of the market and, hence, intensify price competition later in the life of the product.

Whiston (1990) corroborated this theory, which questions the, by then well-established, "single monopoly profit theory," as it demonstrated that such a theory relies on overly stringent conditions, such as perfect competition and no fixed costs. These conditions do not apply in high tech industries.

Matutes and Regibeau (1992) found that they may have been too quick in concluding that compatibility leads to higher prices by assuming that mixed bundle rebates were not possible. Where such rebates are possible, firms still choose full compatibility but, by offering bundled discounts, prices fall. They concluded that compatibility will increase consumer surplus but may reduce profits and total surplus.

Matutes and Padilla (1994) argued that, in a tripoly, compatibility has two effects: a competition effect and a network effect. The network effect pushes firms to choose compatibility, while the opposite is true with the competition effect. Assuming single-homing, firms will choose partial compatibility in order to benefit from the network effect while containing the competition effect, and this is inefficient from a consumer and total welfare viewpoint.

Choi and Stefanides (2001) concluded that in a duopoly where there are no network externalities, if Firm A, an incumbent offering both base and component products, faces potential competition in a component market, it will choose incompatibility to deter entry. This will force Firm B, a potential entrant, to enter both the base product and component markets to succeed. Entering two markets is significantly more costly and risky. Carlton and Waldman (2002) affirmed this finding. These papers were written in connection with the *Microsoft* browser cases in the US, in circumstances where the single monopoly profit theory does not apply.

From 2004, the analysis of compatibility was somewhat refocused. Compatibility was seen with keener eyes. Doganoglu and Wright (2006), for example, argued that in a duopoly with network effects and multi-homing, multi-homing weakens competition. Multi-homing makes compatibility more desirable from a social viewpoint and less attractive for firms.

Of course, everyone was conscious that compatibility decisions can lead to underinvestment, by reducing incentives to invest. Some argue that there is too much emphasis on underinvestment risks, however. Many investments do not create value for consumers; this is the case where the only purpose of the investment is to create incompatibility. Regarding telecommunications, underinvestment may be an issue, however access-based competitors which become viable may then be able to become fully-fledged infrastructure competitors. The impact of investment effects needs to be considered from an *ex ante* and *ex post* perspective.

One criticism of the literature prior to 2004 was that the possibility of multi-homing was ignored. Some argued that multi-homing eliminated the risk of market foreclosure due to incompatibility and thus reduced the need for, and the desirability of, interoperability. Kim and Choi (2015) contended that this result is not robust: foreclosure is possible even when multi-homing is possible in oligopolies with more than two players.

Jeon, Menicucci and Nasr (2016) concluded that, even assuming the absence of network effects, where switching costs are high, firms will make their products incompatible in order to soften future competition. This reduces consumer and social welfare. Incompatibility is more likely in a mature market than in a growing market. In the presence of switching costs, therefore, compatibility increases the value for consumers and the market as a whole. Incompatibility is a means of creating a loyal customer base which can be exploited over time.

De Cornière and Taylor (2019) find that where upstream firms compete for shelf space downstream by offering slotting fees, incompatibility upstream may foreclose upstream rivals by reducing their willingness to pay high slotting fees. This generates downstream effects, giving rise to lower prices in the short term but potentially higher prices in the long term.

This body of research started with the belief, supported by the single monopoly profit theory, that foreclosure was impossible, as a monopolist always had the means of extracting rents from entrants. This is no longer the case; the theory has established that, under certain circumstances, incompatibility may lead to market foreclosure. The evolution of the theory has accelerated since 2004. Nowadays, the set of circumstances under which compatibility is regarded as desirable has expanded. Investment effects are still discussed, and in some cases may be the dominant concern, but there is far greater economic support for ensuring platform interoperability among economists.

Pierre Chastanet
Head of Unit, Cloud and Software, DG Communications Networks, European Commission

The Directorate General for Communications Networks has a longstanding cooperation with ECIS on issues of interoperability and cybersecurity. Security and interfacing are usually an afterthought at the end of the process of software development. There is often a lack of forethought on the integration of a given software package with the broader application ecosystem which creates a *de facto* interoperability problem.

In contrast, in the telecommunications sector, transmission requires that different economic operators interconnect their system and solutions. There is a natural incentive for telecommunications providers to interoperate, as without interoperability there is no data transmission. Thus, this has become the *de facto* way of operating in this area, working through standards development and regulatory intervention.

However, this has not been the culture in the software development space, perhaps somewhat related to the degree of innovation – people develop products rapidly and gradually build ecosystems of software solutions. This is a major driver of innovation in the software space, but at the same time, focusing on a single ecosystem which grows in an organic manner has created dramatic problems of interoperability between ecosystems.

There is a higher degree of concentration around certain ecosystems simply because those products are better and purchases are driven by consumers and producers. However, at some point this may create perverse effects. One method of resolving this has been to use different technical solutions, including pushing the developers to produce APIs (Application Programming Interfaces) with a minimum level of visibility. Another method has been through the development of data ontologies and data semantic. This approach however successful technically has not had a lot of market traction, except in a few areas. Finally, open source approaches represent a promising alternative but may not be suitable in all business areas.

The same issues arise around artificial intelligence – how to ensure that systems which are dynamic, self-learning and evolving over time, are interoperable. Sectoral approaches can also be useful and, more and more sectors are undertaking digital transformation.

Pekka Sivonen
Executive Director of the Digital Transformation of Finnish Industries at Business Finland

There are many future challenges of interoperability and we need huge amounts of interoperability to retain European competitiveness in information and communications technology and artificial intelligence ("**AI**"). It is a very crowded marketplace and blockchain alone will change the world more than the internet did. The quantity of data which exists is now being doubled every 18 months. We will no longer be seeking information, but rather will be swimming in oceans of information. Data is just the beginning – to stay alive and competitive, the best place to start is with a national crisis.

You need a crisis to stimulate innovation and digital transformation. In Finland, the collapse of Nokia led to 30,000 highly trained professionals entering the job market, filling the gaps in all verticals and industries. This is the natural reason why Finland has attracted so much foreign direct investment recently. Money is seeking talent.

The world economy is worth 80 trillion USD, and by 2030, digital transformation will cumulatively provide another 100 trillion. At present Europe has only a 5% market share of the top 50 platforms. It is estimated that by 2030, 30% of the Finnish economy will be comprised of data and AI. Digital infrastructure is the new critical infrastructure, and Finland is now investing heavily in infrastructure, spending €20 billion on smart city infrastructure in 2019.

5G enabled cybersecurity is important for Europe and will play a central role in achieving the digital transformation of the EU's economy and society. Indeed 5G networks have the potential to enable and support a wide range of applications and functions, extending far beyond the provision of mobile communication services between end-users. Finland is currently rolling 5G in cities. With 5G revenues estimated to be €225 billion in 2025, 5G technologies and services are a key asset for Europe to compete in the global market. The cybersecurity of 5G networks is therefore essential to protect our economies and societies and to enable the full potential of the important opportunities they will bring. It is also crucial for ensuring the strategic autonomy of the Union. Gaia-X, is a German initiative, aimed at creating a federated data structure for Europe. Finland is endorsing this and wants to see a zero emission cloud which is the biggest in the world.

Industry is one of the pillars of the European economy, with the EU manufacturing sector accounting for two million enterprises, 33 million jobs and 60% of productivity growth. We stand on the brink of a new industrial revolution, driven by new-generation information technologies such as the internet of things, cloud computing, big data and data analytics, robotics, and 3D printing. They open new horizons for industry to become more adventurous, more efficient, to improve processes and to develop innovative products and services.

There is a common misunderstanding that AI will remove jobs, but on the contrary it will create jobs by increasing productivity. The future of AI is in humans and technology working together, and we are already seeing this in Valmet Automotive, where in three years, the number of jobs has grown from 800 to 4,500.

Joan Van Loon
Managing Director, Belux Enterprise Unit Leader Public, Life Sciences, Telco & Utilities at IBM

The recent changes in technology have had a large impact on industry and society but it is difficult for industry and government to keep pace with technological change. The way we look at, and what we expect from business, government and healthcare has completely changed. New relationships have developed between citizens and government, consumers and industry, and patients and healthcare. Where most organisations seem to struggle is how to make sure they build on the customer experience.

There is increasingly more data and the majority is unstructured, coming from pictures, videos and internet of things ("**IoT**") devices. Organisations need to find ways to collect, manage, integrate and exchange this data. Standard technology is no longer sufficient to optimise all of this data, and we need computers which think like humans. We need to decouple the data from the systems to ensure full interoperability.

Thus far we have merely digitised the status quo, but digital innovation goes beyond merely optimising and modernising legacy systems – it is about seamlessly integrating digital technologies into our everyday lives. All of the processes involved in a system, not merely one step along the way, need to be digitised.

Organisations should see digital transformation as a journey: re-engineer processes, then modernise legacy systems, then automate tasks, then infuse innovation (augmented intelligence ("**AI**"), IoT, cloud and mobile, agile, open data, and blockchain), then co-create services, then

transform and personalise the experience. Most processes now are built without taking into account interoperability and security, which are added as an afterthought.

As it stands, data is often in silos, but having more data does not give rise to better solutions upfront, rather you need to consider the intent behind what you are trying to build. The benefits of AI in healthcare are not in replacing doctors, but rather by helping humans to make better decisions. It is the combination of both doctors and augmented intelligence that is essential to making this technology a success. In the digital transformation, trust and transparency are essential. It needs to be understood where data is coming from and what it is being used for.

We have three common challenges: consolidating data, analysing it and deriving meaningful and actionable insights from it. The focus needs to be on data quality, data access, interoperability, data analytics, and augmented intelligence.