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# Transatlantic Antitrust and IPR Developments

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# Contents

- ANTITRUST ..... 6**
- European Union..... 6**
  - The EU Foreign Subsidies Regulation: a Structural Change to the Internal Market ..... 6
- INTELLECTUAL PROPERTY .....10**
- United States..... 10**
  - I, Robot: The U.S. Copyright Office Publishes Guidance on Registration of Works Generated by AI ..... 10
  - When Faux-Fur Birkin Bags Blur a Famous Mark in the Metaverse..... 14
- OTHER DEVELOPMENTS .....18**
- United States..... 18**
  - Can Banning Apps Contribute to a Privacy-friendlier Internet? ..... 18
- European Union..... 20**
  - Navigating the European Liability Landscape of Artificial Intelligence: New Proposals and ChatGPT ..... 20
  - New EU rules for a Common Charger for Electronic Devices ..... 27
  - A Legal-Technical Basis for a Computational Transatlantic Trade and Investment Partnership (TTIP) Agreement..... 31

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St. Gallen and the University of Bern in Switzerland. She earned an LL.M. degree at the University of California, Los Angeles (UCLA) and was awarded the Dean's Tuition Fellowship at UCLA School of Law. Salome has been a TTLF Fellow at Stanford Law School since 2022.

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## Antitrust

*European Union*

# The EU Foreign Subsidies Regulation: a Structural Change to the Internal Market

*By Amedeo Rizzo*

The [EU Foreign Subsidies Regulation](#) (“FSR”) has been published on the 14<sup>th</sup> of December 2022 and entered into force on 12 January 2023. The Regulation creates a new regime with the objective of protecting the internal market of the European Union from distortions created by foreign subsidies. In doing so, the FSR imposes an approval procedure for foreign subsidies to companies engaging in commercial activities in the EU and notification obligations for M&A activities of significant EU businesses and large EU public contracts.

The objective of the Regulation is to close an existing loophole in the internal market supervision, which was very restrictive towards EU state aid regulation but did not take into account possible distortions coming from non-EU countries. This is supposed to create a level playing field for all companies that operate in the EU, supervised by the European Commission, through investigatory powers, *ex officio*, and

rights to implement measures to ensure compliance.

### Foreign Subsidies covered by the Regulation

The FSR covers any form of contributions, direct or indirect, provided by non-EU governments or any public or private entity whose actions are attributable to the government of the non-EU country. Contributions could be distortive where they confer benefits that would not normally be available on the market EU company, and which are selective in the way they advantage one or more companies or industries as opposed to all companies or all companies active in a particular industry.

The notion of financial contributions under the FSR is a quite broad concept, including many forms of advantages. As provided in the Regulation, **financial contributions** include but are not limited to:

- the transfer of funds/liabilities, such as capital injections, grants, loans, guarantees, tax incentives, the setting off of operating losses, compensation for financial burdens imposed by public authorities, debt forgiveness, debt to equity swaps or rescheduling;
- the foregoing of revenue that is otherwise due, such as tax exemptions or the granting of special or exclusive rights without adequate remuneration; or

- the provision of goods or services or the purchase of goods or services.

These kinds of benefits include zero- or low-interest loans, tax exemptions and reductions, state-funded R&D and other forms of intellectual property subsidization, government contracts and grants of exclusive rights without adequate remuneration.

The **subjects** that are limited in their ability to provide contributions to companies operating in the EU internal market are all the entities related to the non-EU country and therefore include:

- the central government and public authorities at all other levels;
- any foreign public entity whose actions can be attributed to the third country, taking into account elements such as the characteristics of the entity and the legal and economic environment prevailing in the State in which the entity operates, including the government's role in the economy; or
- any private entity whose actions can be attributed to the third country, taking into account all relevant circumstances.

### **Distortion of competition in the EU**

One of the fundamental factors to trigger the FSR is that the foreign subsidy needs to potentially distort competition in the EU, meaning that it negatively affects it.

**Distortions** in the internal market are determined on the basis of indicators, which can include:

- the amount of the foreign subsidy;
- the nature of the foreign subsidy;
- the situation of the undertaking, including its size and the markets or sectors concerned;
- the level and evolution of the economic activity of the undertaking on the internal market;
- the purpose and conditions attached to the foreign subsidy as well as its use on the internal market.

In general, the Commission seems to have quite an extensive distortionary power over the decision-making process of recognizing the negative effects. However, it will have to take into account also the positive effects on the market, which will burden the Commission with a **balancing test**.

The Regulation provides some dimension-related thresholds for financial contributions to what is likely to distort competition:

- A subsidy that does not exceed the *de minimis* aid measures, contained in [Regulation \(EU\) No 1407/2013](#) (EUR 200,000 per third country over any consecutive period of three years) shall not be considered distortive.
- A subsidy that does not exceed EUR 4 million per undertaking over any

consecutive period of three years is unlikely to cause distortions.

- A subsidy that exceeds EUR 4 million is likely to cause distortions if it negatively affects competition in the EU.

### The role of the European Commission

On its own initiative, the Commission may review a transaction or a public procurement **ex-officio** on the grounds of information received by any source or notifications of potentially subsidized M&A transactions or public procurement bids. If the Commission finds sufficient evidence concerning the existence of a distortive subsidy, it carries out a **preliminary review**.

When this procedure leads to enough evidence of the foreign distortive subsidy, the Commission initiates an **in-depth investigation**. When a foreign distortive subsidy is identified, the Commission can impose redressive measures or accept commitments.

The non-exhausting list of **redressive measures** includes the reduction of capacity or market presence of the subsidized entity, the refraining from certain investments, and the repayment of the foreign subsidy.

The recipient of the subsidy may offer **commitments** and, for instance, pay back the subsidy. The Commission may accept commitments if considers them to be full and effective remedies to the distortion.

A separate mechanism of **market investigations** allows the Commission to investigate a particular business sector, a type of economic activity or a subsidy if there is reasonable suspicion. In its surveillance activities, the Commission can conduct a **request for information** that entities or their associations provide certain information, irrespective of whether they are subject to an investigation.

To block damaging activities the Commission can impose **interim measures**. Additionally, it is authorized to impose **finances** on the entities for breaching procedural requirements or not providing information. The fines can reach 1% of the aggregate turnover or 5% of the average daily aggregate turnover for each day of the violation, calculated on the previous year's data. Fines can go up to 10% of the turnover when companies fail to notify a transaction or a subsidy granted during a public procurement procedure, implement a notified concentration before the end of the review period, or try to circumvent the notification requirements.

### Conclusion

This measure constitutes a paramount change in the EU approach to competition in the internal market. It will become important to see how much the Commission is going to use this new instrument, and the way it is going to assess market distortions on a case-by-case basis, as there is probably going to be a delicate equilibrium with



**trade legislation** and possible countervailing measures.

It is important for companies that operate in the EU that have received these kinds of financial contributions from non-EU countries to quickly prepare to apply this new Regulation. Perhaps some groups that can fall in this situation might want to reform their **internal processes** to collect information, understand reporting requirements and preparing justifications or notifications to the EU.

## Intellectual Property

*United States*

# I, Robot: The U.S. Copyright Office Publishes Guidance on Registration of Works Generated by AI

*By Marie-Andrée Weiss*

On March 16, 2023, the U.S. Copyright Office (USCO) published its [Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence](#) (the Guidance).

Artificial Intelligence (AI) is now “*capable of producing expressive material*”. The USCO chose its words carefully: AI “produces” works, it does not “create” them. However, these works are “expressive materials”.

AI is now among us, but not in the shape imagined by [Isaac Asimov](#), androids, such as Robbie, who is taking care of a little girl. AI is on our desktop and in our pockets, an app installed on our smart phone.

AI technology can be used to produce a work by first obtaining a large data set of preexisting works, using this data set to “train” and then “use inferences from that training to generate new content.” Such

content can be a text, an image, or an audio. The USCO mentioned in the Guidance that it would later this year publish a notice of inquiry about how law should address the use of works protected by copyright in the data set.

The USCO mentioned two recent cases raising the issues of whether a work created using an AI program can be protected by copyright: “Entrance to Paradise”, pictorial work, and Zarya of the Dawn, a comic book which images were created by AI while a human authored the text. Are the works thus produced protectable by copyright?

### **An Entrance to Paradise**

Dr. Stephen Thaler created *A Recent Entrance to Paradise*, the image of an abandoned train tracks framed by wisterias, using an AI program it called the “Creativity Machine” that he had created and programmed.

Dr. Thaler sought to register its copyright in November 2018 but the USCO denied registration in August 2019, because the Office has a “Human Authorship Requirement” policy. Dr. Thaler filed two requests for reconsideration which the USCO both [denied](#). Dr. Thaler [filed a suit](#) against the USCO in June 2022, claiming that “the denial creates a novel requirement for copyright registration that is contrary to the plain language of the Copyright Act..., contrary to the statutory purpose of the Act, and contrary to the Constitutional mandate to promote the

progress of science.” The denials are subject to judicial review under the [Administrative Procedure Act, 5 U.S.C. § 704](#).

On January 10, 2023, Dr. Thaler [filed a motion for summary judgment](#), arguing that “the plain language of the Copyright Act... does not restrict copyright to human-made works, nor does any case law.” The work is fixed, visual artwork. As explained in 1991 by the Supreme Court of the U.S. (SCOTUS) in [Feist Publications, Inc. v. Rural Telephone Service Company](#) “To qualify for copyright protection, a work must be original to the author”, which means that the work must be independently created by the author and must possess at least some minimal degree of creativity.

Dr. Thaler also argued that “courts have referred to creative activity in human-centric terms, based on the fact that creativity has traditionally been human-centric and romanticized.”

Alternatively, Dr. Thaler argued that he owns the copyright in “A Recent Entrance to Paradise” because the work for hire ownership originally vested in him because he invented and owns the Creativity Machine and its outputs automatically vest in him.

### **Zarya of the Dawn**

Kristina Kashtanova, created a comic book, *Zarya of the Dawn*, using an AI program to illustrate it. She sought to register its copyright and was successful at first, but the USCO then [canceled the certificate](#) and

issued a new one protecting only the text of the comic book and the selection, coordination, and arrangement of its written and visual elements. However, the images created by AI were not protectable because they “*are not the product of human authorship.*” The letter of the USCO cited [Burrow-Giles Lithographic Co. v. Sarony](#), a 1884 case where SCOTUS explained that photographs, still a technological novelty at the time, were protected by copyright because they were “representatives of original intellectual conceptions of the author.” SCOTUS defined authors in *Burrow-Giles* as “he to whom anything owes its origin; originator; maker; one who completes a work of science or literature.” But the Court explained that if photography was a “merely mechanical” process ...with no place for novelty, invention or originality” for the photographer, then the photographs could not be protected by copyright.

The USCO explained in its letter about *Zarya of the Dawn* that even if Ms. Kashtanova claimed to have “guided” the structure and content of the comic images, it was the AI program, not her, “that originated the “traditional elements of authorship” in the images.”

### **Public guidance on the registration of works containing AI**

These two cases show that works can be entirely protected by AI or only partially. The purpose of the Guidance is to provide the public (and its attorneys!) if seeking to

register works containing content generated (not created!) by AI.

In the Guidance, the USCO explained that it evaluated whether works containing human authorship combined by uncopyrightable material generated by or with assistance of technology by assessing if technology was an “*assisting instrument*” or if the work was conceived by it. In the case of AI, the USCO explained that it “*will consider whether the AIA contributions containing AI-generated are the result of “mechanical reproduction “or instead an author’s “own original mental conception, to which [the author] gave visible form”, and that this would be assessed case by case.*

If the AI receives solely a prompt from a human being, the work cannot be protected by copyright, as it is the human being who does not have creative control over how the AI system interprets the prompt and generates the work, and that the prompts are more like instructions to a commissioned artist.

If a work contains AI-generated material and sufficient human authorship, it can be protected by copyright, for instance, if a human being selects and arranges AI-generated materials in a way original enough to be protectable.

### **Public guidance on the registration of works containing AI**

### **Does the Copyright Act indeed require human authorship?**

The USCO cited *Burrow-Giles* in its Guidance to support its view that authors must be human and also cited the Ninth Circuit [Urantia Found. v. Kristen Maahera](#) case, where the court held that a book, which both parties believed was “*authored by celestial beings and transcribed, compiled and collected by mere mortals.*” The defendant in this copyright infringement suit claimed that the book was not protected by copyright, because it was not authored by a human being and thus not a “work of authorship” within the meaning of the Copyright Act.

However, the Ninth Circuit noted that “[t]he copyright laws, of course, do not expressly require “human” authorship, and considerable controversy has arisen in recent years over the copyrightability of computer-generated works”. In this case, the Court noted that the Copyright Act was not intended to protect “*creations of divine beings*” and that “*in this case some element of human creativity must have occurred in order for the [b]ook to be copyrightable.*”

If the Copyright Act does not require human authorship, but refuses to accept that “*divine beings*” can be the author, and case law states that a monkey, human beings’ closest cousin, [cannot be an author within the meaning of the Copyright Act](#) (*Naruto v. Slater*, a case from the United States District Court, Northern District of California [previously discussed](#) in the TTL Newsletter), will robots ever be able to claim authorship of a work? Such works are already winning

prizes at art fairs, such as *Théâtre D'opéra Spatial*, created using AI, [which won first prize at the Colorado State Fair's digital arts competition](#).

If works created by AI cannot be protected by copyright, the incentive to develop such technology may be lacking. We are likely to see more and more works created by humans using elements created by AI, and the border between elements created by human beings or by machines blurring more and more.

## Intellectual Property

*United States*

# When Faux-Fur Birkin Bags Blur a Famous Mark in the Metaverse

*By Marie-Andrée Weiss*

A year ago, this blog [reported](#) about the *Hermès v. Rothschild* case, a trademark infringement suit filed by French fashion house *Hermès* against artist Mason Rothschild.

Rothschild had created in December 2021 the [MetaBirkins series](#), a series of 100 non-fungible tokens (NFTs) featuring digital images of blurry Birkin *Hermès* bags covered in fake fur. The NFTs, which are retaining digital records of ownership of the images on a blockchain, sold “for prices comparable to real-world Birkin handbags” as noted by Judge Jed S. Rakoff, from the U.S. District Court for the Southern District of New York (SDNY), in his May 18, 2022 Order, denying Rothschild’s motion to dismiss.

On December 30, 2022, Judge Rakoff denied the parties' cross motions for summary judgment, with opinion to follow.

Plaintiff and Defendant had both asked the Court to answer two questions:

- Should the MetaBirkins be evaluated using the two-part *Rogers v. Grimaldi* test used when evaluating trademark infringement in artistic works or the *Gruner + Jahr* test used for general trademark infringement?
- Whichever test is applied, do the Meta-Birkins dilute the *Hermès'* BIRKIN trademarks?

Judge Rakoff published his [opinion](#) on February 2, 2023. He reaffirmed, as he did in his May 18, 2022 Order, that the trademark infringement claim should be assessed under the *Rogers v. Grimaldi* test. However, as genuine issues of material fact remained, the second question had to be answered by a jury, who had to decide whether Rothschild’s decision to focus the series on the Birkin bag was made for artistic expression purposes or merely to use the BIRKIN trademark.

### The *Rogers* test

Under the *Rogers* test, there is no trademark infringement if defendant uses a mark as the title of an expressive work, or as part of the expressive work if use of the trademark (1) does not have any artistic relevance whatsoever to the underlying work and (2) is not explicitly misleading.

For Judge Rakoff, the *Rogers* test must be used in this case because:

“Rothschild's use of *Hermès'* marks did not function primarily as a source identifier that

would mislead consumers into thinking that Hermès originated or otherwise endorsed the MetaBirkins collection, but rather as part of an artistically expressive project.”

Judge Rakoff reasoned that the title "Meta-Birkins" referred to both the NFT and the digital images with which it is associated and that "MetaBirkins" did not, as argued by *Hermès*, refer only to the NFTs "separate and apart from the digital images" of the faux-fur bags. The NFTs are artistic expression.

Judge Rakoff noted further that Rothschild “viewed the project as a vehicle to comment on the Birkin bag’s influence on modern society”, stating in an interview that the series was "an experiment to see if [he] could create that same kind of illusion that [the Birkin bag] has in real life as a digital commodity", and that he had decided to cover the bag in fake fur “to introduce "a little bit of irony" to the efforts of some fashion companies to "go fur-free." Indeed , the artist [wrote](#) that the series“ inspired by the acceleration of fashion’s “fur free” initiatives and embrace of alternative textiles.”

While an artistic expression, the First Amendment could not be a defense. Judge Rakoff quoted the Second Circuit [Twin Peaks Prods., Inc. v. Publications](#) 1993 case which held that even if a trademark’s use bears "some artistic relevance" to an underlying artistic work, such use is not protected by the First Amendment if it "explicitly misleads as to the source or the content of the work."

The Second Circuit noted in *Twin Peaks* that “the finding of likelihood of confusion must be particularly compelling to outweigh the First Amendment interest recognized in *Rogers*” and that the [Polaroid](#) factors must be applied to determine whether or not there is likelihood of confusion and thus trademark infringement.

Judge Rakoff explained that “the most important difference between the *Rogers* consumer confusion inquiry and the classic consumer confusion test is that consumer confusion under *Rogers* must be clear and unambiguous to override the weighty First Amendment interests at stake.”

The *Rogers* test was indeed used by a federal jury to determine whether or not the MetaBirkins infringed *Hermès’* trademarks, but, following a six-day trial, a jury found on February 14, 2023, that Rothschild was liable on the claims of trademark infringement, trademark dilution, and cybersquatting, that the First Amendment was not a defense, and awarded Hermès \$133,000 in damages.

### **Trademark dilution and blurring**

*Hermès* had also claimed trademark dilution and blurring, which refers to use of a famous trademark in a way which dilutes such famous mark by blurring or tarnishment. A famous mark is defined by the Trademark Dilution Revision Act (TDRA) as widely recognized by the general U.S. consuming public

as a designation of source of the mark owner's goods or services.

The jury found that the BIRKIN mark was blurred by Rothschild's by blurring the distinctiveness of the famous BIRKIN mark and diminished its capacity to identify and distinguish *Hermès'* goods and services, regardless of the presence or absence of actual or likely confusion, of competition, or of actual economic injury.

### Cybersquatting

The jury also held in favor of *Hermès*, which had claimed that the <metabirkins.com> domain name was cybersquatting. To prevail on a cybersquatting claim, *Hermès* had to prove (1) that the BIRKIN mark was distinctive at the time <metabirkins.com> was registered; (2) that the <metabirkins.com> domain name is identical to, or confusingly similar to, *Hermès'* s BIRKIN mark; and (3) that Rothschild had a bad faith intent to profit from the BIRKIN mark.

The court's instructions to the jury explained that when determining whether Rothschild acted in bad faith on this claim, the jury had to consider whether the artist used the domain name in connection with the offering of any goods or products and whether he "*intended to divert consumers from the mark owner's online location to a site that could harm the goodwill represented.*"

### Trademarks, symbols and humor

While the primary function of a trademark is to indicate the source of a product or service, some trademarks have become symbol and are used by consumers to provide a desired cachet, one of luxury and exclusivity in the case of the BIRKIN trademark.

The [Birkin](#) bag created by *Hermès* was named after actress and singer Jane Birkin. While expensive, they sell well: as noted by Judge Rakoff in its February 2, 2023, opinion, since 1986, *Hermès* has sold over \$1 billion worth of Birkin handbags in the United States, \$100 million dollars' worth in the past ten years. Both parties recognized that it is a "symbol of wealth and exclusivity."

The *MetaBirkins* sold in total over \$1.1 million through June 2022 and it is likely that at least some bought them as symbol of their wealth, taste, and sense of irony. However, unlike in the case of *Jack Daniel's Properties, Inc. v. VIP Products LLC*, a case about dog chew toys resembling Jack Daniels bottles, the use of the BIRKIN mark was not humorous.

The *Jack Daniel* case is [currently pending at the Supreme Court of the United States](#), which will soon answer the question whether humorous use of another's mark as one's own on a commercial product is "noncommercial" under 15 U.S.C. § 1125(c)(3)(C), and thus bars as a matter of law a claim of dilution by tarnishment under the TDRA. We will keep you posted.





## Other Developments

### *United States*

# Can Banning Apps Contribute to a Privacy-friendlier Internet?

*By Salome Kohler*

## 1. Why banning could help

Recently, several governments, such as the UK and other European countries, have decided to ban the popular TikTok app from government devices.<sup>1</sup> In the U.S., the White House told federal agencies at the end of February 2023 that they had one month time to remove the TikTok app from government devices.<sup>2</sup> So far, TikTok has already been banned on the devices of Congress, the White House, and the U.S. Armed

Forces, due to concerns that the app collects users' browsing history, location, etc.<sup>3</sup>

However, the U.S. also considering banning the app from all devices in the U.S.<sup>4</sup> The main problem is that sensitive user data is collected, used, and sold by many different apps and websites, including TikTok.<sup>5</sup> In particular, there is no transparency to the end-user about what kind of data is being collected.<sup>6</sup> While banning apps may violate the First Amendment right to freedom of speech, a ban could be considered if security threats cannot be addressed by other means. A major concern could be the collection of a lot of (sensitive) user data on millions of Americans, leaving them rather unaware of the privacy attack against them. Not only private matters, but also business and other sensitive information can be collected and used by the data collector. Since we don't know which person has information that could be a security risk, a general prohibition could be supported.

In 2020, a ban on TikTok was rejected by federal courts, which found that the security risks did not outweigh the restriction of First Amendment rights.<sup>7</sup> However, if the

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<sup>1</sup> Sapna Mahehwari, Amanda Holpuch, *Why Countries Are Trying to Ban TikTok*, THE NEW YORK TIMES (Mar. 27, 2023), <https://www.nytimes.com/article/tiktok-ban.html>.

<sup>2</sup> *Id.*

<sup>3</sup> Haleluya Hadero, *Why TikTok is being banned on gov't phones in US and beyond*, AP NEWS (Feb. 28, 2023), <https://apnews.com/article/why-is-tiktok-being-banned-7d2de01d3ac5ab2b8ec2239dc7f2b20d>.

<sup>4</sup> Sapna Mahehwari, Amanda Holpuch, *Why Countries Are Trying to Ban TikTok*, THE NEW

YORK TIMES (Mar. 27, 2023), <https://www.nytimes.com/article/tiktok-ban.html>.

<sup>5</sup> *Id.*

<sup>6</sup> Lauren Feiner, *How a TikTok ban in the U.S. might work*, CNBC, (Mar. 17, 2023), <https://www.cnbc.com/2023/03/17/how-a-tiktok-ban-in-the-us-might-work-and-challenges-it-raises.html>.

<sup>7</sup> Chloe Xiang, Jordan Pearsons, Jason Koebler, *Banning TikTok Is Unconstitutional, Ludicrous, and a National Embarrassment*, VICE (Mar. 23, 2023),

RESTRICT Act were to become law, the government would be able to ban apps and other technology products if they come from countries that could be a threat to U.S. interests.<sup>8</sup> A key issue seems to be comprehensive information about how much online data is actually being collected. However, the effectiveness of a ban on data collection would also be a concern - even a ban might not undermine all user data collected.<sup>9</sup>

websites, etc. that undermine the privacy of online users.<sup>15</sup>

## 2. Better approach: Tighter regulation

Computational studies have shown that even when a user declines an app's collection of data, it is often collected anyway.<sup>10</sup> So we see a lot of privacy violations in Europe as well as the U.S.<sup>11</sup>

TikTok could grow just as fast due to lack of privacy law.<sup>12</sup> However, many other apps still collect intimate details about the user while profiting from that data.<sup>13</sup> This means that TikTok and other actors can still buy the data from data brokers, violating privacy as such.<sup>14</sup>

Therefore, a much better approach would be to address the privacy issues of all apps,

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<https://www.vice.com/en/article/epv48n/banning-tiktok-is-unconstitutional-ludicrous-and-a-national-embarrassment>

<sup>8</sup> *Id.* (VICE), S. 686 – Restrict Act, 118<sup>th</sup> Congress (2023-2024), <https://www.congress.gov/bill/118th-congress/senate-bill/686/text>.

<sup>9</sup> *Id.* (VICE).

<sup>10</sup> J Reardon, A Feal, P Wijesekera, A Elazari bar On, N Vallina-Rodriguez, S Egelman, *50 Ways to Leak Your Data: An Exploration of*

*Apps' Circumvention of the Android Permissions System*, PROCEEDINGS OF THE 28<sup>TH</sup> USE-NIX SECURITY SYMPOSIUM, AUGUST 14-16, 2019, Santa Clara, CA, USA, 615.

<sup>11</sup> *Id.*

<sup>12</sup> Calli Schroeder, *TikTok is Not the Only Problem*, EPIC (Mar. 23, 2023), <https://epic.org/tiktok-is-not-the-only-problem/>

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

## Other Developments

### *European Union*

# Navigating the European Liability Landscape of Artificial Intelligence: New Proposals and ChatGPT

By *Stefan Heiss*

The EU is a beacon of regulation that leads many standards worldwide.<sup>16</sup> Digitalization is now on the EU agenda for new legislation. Since 2020, the European Commission and European Parliament unveiled four groundbreaking draft legislations towards a framework for Artificial Intelligence (AI).<sup>17</sup> Most recently, in September 2022, the Commission took a holistic approach to liability in its AI

<sup>16</sup> See generally ANU BRADFORD, *THE BRUSSELS EFFECT: HOW THE EUROPEAN UNION RULES THE WORLD* (2019).

<sup>17</sup> *Resolution on a civil liability regime for artificial intelligence*, EUROPEAN PARLIAMENT (Oct. 20, 2020); *Proposal for a Regulation laying down harmonised rules on artificial intelligence*, EUROPEAN COMMISSION (Apr. 21, 2021), [hereinafter AI Act]; *Proposal for a Directive of the European Parliament and of the Council on adapting non-contractual civil liability rules to artificial intelligence*, EUROPEAN COMMISSION (Sep. 28, 2022) [hereinafter AI Liability Directive]; *Proposal for a Directive of the European Parliament and of the Council on liability for defective products*, EUROPEAN COMMISSION

policy, proposing adaptations to the producer's liability for defective products as well as a novel directive focusing solely on the liability of AI. The two initiatives are inherently interlinked, and commentators state that companies located outside of Europe will be significantly affected.<sup>18</sup>

Today, AI's effects are unlike anything that have come before. Finally, Bard, Bing, ChatGPT, and other large generative AI models have lifted the autonomous vehicle as a prime example in the common debate on AI and demonstrate AI's broader potential. According to OpenAI, its updated version of ChatGPT already passes a simulated bar exam with a score around the top 10% of test takers.<sup>19</sup> The distinctive characteristic of AI is its ability to act under uncertainty. Autonomy, connectivity, and opacity are characteristics which describe AI systems.<sup>20</sup>

Use cases have outlined the poor quality of various AI applications which are already operating in public.<sup>21</sup> However, it has been argued that the harms AI systems cause do

(Sep. 28, 2022) [hereinafter Product Liability Directive].

<sup>18</sup> Philipp Hacker, *The European AI Liability Directives – Critique of a Half-Hearted Approach and Lessons for the Future*, at 1 (Jan. 20, 2023), <https://ssrn.com/abstract=4279796>.

<sup>19</sup> *GPT-4*, OPENAI (Mar. 14, 2023).

<sup>20</sup> Often AI is also referred to as autonomous systems or robots, however, the definition of AI is anything but clear, see, e.g., Bryan Casey & Mark A. Lemley, *You Might Be a Robot*, 105 CORNELL L. REV. 287 (2020).

<sup>21</sup> See, e.g., Obermeyer et al., *Dissecting racial bias in an algorithm used to manage the health of populations*, 366 SCIENCE 447 (2019).

not always fit neatly into the law's liability regimes.<sup>22</sup> Since insufficient liability rules might fail to deliver efficient incentives to AI manufacturers or users and can even hamper the innovation of AI, the EU recognizes the need for further actions. Companies also pointed out that the threat of liability is a major obstacle because of which they have not yet adopted AI into their operation.<sup>23</sup>

The introduction of new laws is certainly a direct challenge to Silicon Valley's tech culture that law should leave emerging technologies alone. It is crucial to recognize that the path taken by a legislator might be difficult to adjust later.<sup>24</sup> The key concern is to misjudge the fast-moving technology and initiate precise *ex ante* regulations such as within the AI Act.<sup>25</sup> It has been argued that ChatGPT already demonstrates the limits of the AI Act.<sup>26</sup> On the other hand, civil liability standards such as negligence are capable of governing several possible contingencies

*ex post*.<sup>27</sup> Such an approach seems much more flexible for AI. Therefore, the Commission's step to look into proper liability measures for AI manufacturers and operators should be welcomed.

The following focuses on the two most recent European proposals on the liability of AI. Since several stakeholders are involved in the process of the development and application, the first question concerns the person who should be the main target of a liability scheme.

### **Manufacturer vs. Operator (who should be liable?)**

Manufacturer, operator, user, or even the AI system itself were named as the main centers of interest for a liability scheme. In 2017, the European Parliament was taken with the idea of AI's own personhood.<sup>28</sup> But all that glitters is not gold, and – rightly so –

<sup>22</sup> See, e.g., Yavar Bathaee, *Artificial Intelligence Opinion Liability*, 35 BERKELEY TECH. L.J. 113 (2020); *Liability for Artificial Intelligence and other emerging technologies*, EUROPEAN EXPERT GRP. ON LIABILITY AND NEW TECHNOLOGIES (May 2019).

<sup>23</sup> *European enterprise survey on the use of technologies based on artificial intelligence*, IP-SOS BELGIUM & ICITE, at 58 (2020).

<sup>24</sup> Horst Eidenmüller, *The Rise of Robots and the Law of Humans*, 27 Oxford Legal Studies Research Paper at 1 (2017), <https://ssrn.com/abstract=2941001>.

<sup>25</sup> See generally Mauritz Kop, *EU Artificial Intelligence Act: The European Approach to AI*, TRANSATLANTIC ANTITRUST AND IPR DEVELOPMENTS, STANFORD UNIVERSITY, Issue No. 2/2021; Stefan Heiss, *Artificial Intelligence meets European Union law: The EU proposals*

*of April 2021 and October 2020*, 10 J. EUROPEAN CONSUMER & MARKET L. 252, 252–257 (2021) (providing an overview on the AI Act and stresses the need for a flexible approach).

<sup>26</sup> See, e.g., Gian Volpicelli, *ChatGPT broke the EU plan to regulate AI*, POLITICO (Mar. 3, 2023); see generally Roe Sarel, *Restraining ChatGPT*, (Feb. 15, 2023), <https://ssrn.com/abstract=4354486>.

<sup>27</sup> Stefan Heiss, *Towards Optimal Liability for Artificial Intelligence: Lessons from the European Union's Proposals of 2020*, 12 HASTINGS SCI. & TECH. L.J. 186 (2021). Cf. Margot E Kaminski, *Regulating the Risks of AI*, 103 B. U. L. REV. (forthcoming) (calling for alternative schemes of regulation, like civil liability).

<sup>28</sup> *Resolution on Civil Law Rules on Robotics*, at para. 59 (f), EUROPEAN PARLIAMENT (Feb. 16, 2017).

neither the European Commission nor the Parliament has touched on it since.

Two addressees have been the primary focus of the proposed liability schemes. On the one hand, the initiative by the European Parliament focuses on the frontend operator who exercised control over the system.<sup>29</sup> On the other hand, the European Commission suggested that the manufacturer ought to be primarily targeted. With regard to autonomous cars, the question seems as easy as it gets. If the “driver” becomes a passenger, she cannot (and should not) influence the safety of the vehicle. Now the manufacturers of autonomous cars are expected to bear the costs of accidents caused by these vehicles.<sup>30</sup>

But what about ChatGPT? It is highly questionable whether software not embedded in hardware falls under the concept of a product.<sup>31</sup> However, the proposal of the new product liability directive will provide some clarification. If standalone AI like ChatGPT is considered as product, then OpenAI would be the manufacturer. The question, thus, becomes: Should OpenAI bear all the costs for the harm caused by its chatbot?

To answer this question, one ought to keep in mind the infamous misuse of Microsoft’s Twitter chatbot, “Tay”.<sup>32</sup> *Not* Microsoft as possible manufacturer engaged in the misuse. On the contrary, the rogue behavior of Tay resulted from the input of the users.<sup>33</sup> Hence, releasing the user or operator who interacts with the AI system from any liability does not seem to be a desirable solution either. In other words, the manufacturer of a knife might not be the determining factor for a resulting injury. Rather, the user’s conduct seems decisive.

In these cases, wrong incentives for operators or users would result if they had no liability concerns. As mentioned above, contrary to the proposal of the Commission, the Parliament focuses on the frontend operator. In short, the Parliament proposed a scheme of strict liability for high-risk AI systems.<sup>34</sup> However, considerable difficulties occur with the classification of high-risk.<sup>35</sup> Overall, the disruptions to national law and sheer novelty are also the Achilles’ heel of the Parliament’s initiative. The Commission has refrained from imposing strict liability in the new drafts.<sup>36</sup>

Since neither of these two extreme solutions would appear to be effective, either

<sup>29</sup> *Resolution on a civil liability regime for artificial intelligence*, EUROPEAN PARLIAMENT (Oct. 20, 2020).

<sup>30</sup> See Gerhard Wagner, *Liability Rules for the Digital Age*, 13 J. EUR. TORT L. 191, 196 (2022).

<sup>31</sup> See Heiss, *supra* note 27, at 201–202.

<sup>32</sup> Rachel Metz, *Microsoft’s neo-Nazi sexbot was a great lesson for makers of AI assistants*, MIT TECHNOLOGY REVIEW (Mar. 27, 2018); see also José Adorno, *ChatGPT in Microsoft Bing*

*threatens user as AI seems to be losing it*, BGR (Feb. 15, 2023).

<sup>33</sup> Mark. A. Lemley & Bryan Casey, *Remedies for Robots*, 86 CHICAGO L. REV. 1311, 1333 (2019).

<sup>34</sup> See Heiss, *supra* note 25, at 255–256 (providing an overview).

<sup>35</sup> See Heiss, *supra* note 27, at 194–200.

<sup>36</sup> AI Liability Directive, *supra* note 17.

focusing exclusively on the manufacturer or on the frontend operator, further deliberations seem necessary.

## EU Product Liability Directive

The current Product Liability Directive 85/374/EEC dates back to 1985. Considering emerging digital technologies, the existing directive should be repealed and replaced with a new one.<sup>37</sup> Although AI played a role in the adoption of the directive, it can still be considered as a technology-neutral law. Three important amendments that specifically affect AI are as follows: (i.) scope of protection; (ii.) concept of defect; (iii.) burden of proof.<sup>38</sup>

(i.) Most importantly, the proposal clarifies the longstanding debate of the definition of a “product”, explicitly its applicability to software.<sup>39</sup> Art. 4(1) of the draft directive states that standalone software must be understood as a product. This is crucial for large generative AI models like ChatGPT, as they fall within the scope of the proposed Product Liability Directive.

(ii.) The defectiveness of a product is one of the decisive factors to declare whether or not the manufacturer is liable for the harm caused by the product. Compared to

existing law, art. 6(1) of the proposed directive extends the criteria for the defectiveness assessment, which contains several aspects relevant for AI. One important amendment concerns the relevant time when a product is placed on the market. Defects arising after being put onto the market are now explicitly included into the defectiveness test according to art. 6(1)(c) and (e). These amendments may seem appropriate, since digital products, unlike traditional products, remain accessible for manufacturers long after they are placed on the market. Returning to large generative AI models like ChatGPT. For example, Microsoft’s Tay had the potential ability to learn after deployment. Art. 6(1)(c) of the proposal now ensures that the adaptive characteristics do not lead to behaviors beyond a certain risk tolerance threshold.<sup>40</sup> Moreover, art. 6(1)(f) of the draft identifies cybersecurity as a defectiveness of a product; art. 6(1)(d) takes into account the connectivity of products.<sup>41</sup>

(iii) The aspect of disclosure of evidence and access to information are further amendments where the rubber hits the road. First, art. 8 of the draft directive seeks to strike an adequate balance between the interests in disclosure for the claimant and confidentiality for the defendant. However, some commentators raised concerns about

<sup>37</sup> Product Liability Directive, *supra* note 17.

<sup>38</sup> For further deliberations on the amendments, see Hacker; *supra* note 18; Wagner, *supra* note 30.

<sup>39</sup> See Karni A. Chagal-Feferkorn, *Am I an Algorithm or a Product? When Products Liability Should Apply to Algorithmic Decision-Makers*,

30 STAN. L. & POL’Y REV. 61 (2019); Gerhard Wagner, *Software as a Product*, in SMART PRODUCTS 157 (Sebastian Lohsse et al. eds., 2022).

<sup>40</sup> Hacker; *supra* note 18, at 20–21.

<sup>41</sup> Wagner, *supra* note 30, 204–208.

similarities to the US pre-trial discovery system.<sup>42</sup> Second, if the disclosure requirements are not met, art. 9(2)(a) triggers a presumption of defectiveness. Art. 9(2)(b) and (c) refer to two further cases when this presumption applies. Third, two presumptions of causation are proposed in art. 9(3) and (4). On the one hand, art. 9(3) establishes a prima facie evidence (*res ipsa loquitur*) regarding the causal link between the defectiveness of the product and the damage.<sup>43</sup> On the other hand, and more controversial, art. 9(4) addresses the connectivity of AI and its accompanying difficulties of traceability. It refers to situations where the claimant faces excessive difficulties to prove the elements of a claim. The defectiveness of the product or the causation between its defectiveness and the damage shall be presumed where the claimant has cumulatively demonstrated two prerequisites: the product contributed to the damage (a); and it is likely that the product was defective or that its defectiveness is a likely cause of the damage (b). Yet, many questions remain unanswered. What is the meaning of the term "contribute"? A reference to the causal link between the defectiveness of the product and the damage would add no benefit because if causation

is demonstrated there is no more need for a presumption.<sup>44</sup>

## EU AI Liability Directive

The novel draft AI Liability Directive applies to fault-based non-contractual civil law claims for damages caused by an AI system.<sup>45</sup> Contrary to the product liability directive, the proposed AI Liability Directive focuses solely on AI and nothing else. Further, the draft is closely intertwined with the aforementioned AI Act.<sup>46</sup> At first glance, a common denominator between the AI liability directive and the AI Act might seem desirable, but this proposition seems highly questionable. Three basic questions emerge: (i.) What does the reference to the AI Act mean for the scope of application? (ii.) What is the AI Liability Directive about? (iii.) In light of the amendments to the Product Liability Directive, do we need the proposed AI Liability Directive?

(i.) First and foremost, the definition of AI is a topic on its own.<sup>47</sup> Art. 2(1) and (2) of the draft imports the definition of AI and of high-risk AI systems from the AI Act. However, the extremely broad definition within the AI Act captures almost any software.<sup>48</sup>

<sup>42</sup> Gerhard Spindler, *Die Vorschläge der EU-Kommission zu einer neuen Produkthaftung und zur Haftung von Herstellern und Betreibern Künstlicher Intelligenz*, 38 *COMPUTER UND RECHT* 689, 696–697 (2022).

<sup>43</sup> Wagner, *supra* note 30, 217.

<sup>44</sup> Wagner, *supra* note 30, 217–218.

<sup>45</sup> AI Liability Directive, *supra* note 17.

<sup>46</sup> See Heiss, *supra* note 25, at 254–255 (providing an overview).

<sup>47</sup> See Sofia Samoilis et al., *AI Watch: Defining Artificial Intelligence*, JRC TECHNICAL REPORTS (2020) (analyzing 55 key documents of definitions on AI).

<sup>48</sup> See, e.g., Mireille Hildebrandt, *Global competition and convergence of AI law*, at 2–4, <https://osf.io/preprints/socarxiv/j36ke/>; Joanna J. Bryson, *Europe Is in Danger of Using the Wrong Definition of AI*, *WIRED* (Mar. 2, 2022).



Second, the risk-based classification in the AI Act had been criticized ever since.<sup>49</sup> In short, two risk levels for AI are mainly distinguished, namely non-high-risk and high-risk AI. The latter is subject to more stringent requirements. The AI Act is attempting to provide predictability for the distinction by means of an exhaustive list. Of course, such an *ex ante* approach seems already questionable due to the inherent nature of AI.<sup>50</sup> Although large generative AI models like ChatGPT are not explicitly mentioned as high-risk, there have been comments that these systems should be included in the list.<sup>51</sup> Apart from that, interestingly, art. 2(3) and (4) of the draft AI Liability Directive focuses on the provider and user. Again, it refers to the definitions in the AI Act which *excludes* AI used in the course of a personal, non-professional activity.<sup>52</sup>

(ii.) Most surprisingly, the proposed AI Liability Directive does not establish or define any rules of liability. Rather, it focuses on the law of evidence. Overall, there are many similar provisions in the AI Liability Directive to the above discussed Product Liability Directive. According to art. 3(1) of the draft AI Liability Directive, the potential claimant has a right against the defendant to disclose evidence at the defendant's disposal. According to art. 3(5), where a defendant fails to comply with a court, the court shall presume that the defendant has breached its duty of

care; but this is rebuttable. Art. 4 of the proposal adds further complexity because of its distinction between non-high-risk and high-risk AI systems, between providers and users, as well as between private and professional users. For example, art. 4(6) establishes a privilege for defendants who used the AI system in the course of a personal, nonprofessional activity. However, only if the private user operates the AI according to specifications and instructions.<sup>53</sup>

(iii.) In contrast to the above-mentioned proposal of the European Parliament, the proposed AI Liability Directive by the European Commission has no substantial impact on national liability law. Further, the proposed amendments to the Product Liability Directive already address many concerns outlined in the draft AI Liability Directive. Due to the overlaps, the AI Liability Directive would be especially relevant where product liability law does not apply. In any case, provisions such as those relating to the distinction of high-risk AI should be reconsidered.

### Do the new proposals walk the talk?

In light of the expanded ambit of the proposed Product Liability Directive, the EU takes a step towards addressing the risks of emerging technologies. The crux of the draft AI Liability Directive, however, is that it

<sup>49</sup> See Heiss, *supra* note 27, at 194–200.

<sup>50</sup> See, e.g., Heiss, *supra* note 25, at 253–254 (suggesting that the basic choice between negligence rule and strict liability could serve as a useful basis for the distinction).

<sup>51</sup> Patrick Grady, *ChatGPT Amendment Shows the EU is Regulating by Outrage*, CENTER FOR DATA INNOVATION (Feb. 13, 2023). See also Hacker; *supra* note 18, at 14–15.

<sup>52</sup> See Wagner, *supra* note 30, 222.

<sup>53</sup> See Wagner, *supra* note 30, 220–240.

refers to a regulation that has not yet entered into force. In general, it is encouraging that the Commission turns its attention to liability law because it ensures that AI systems do not undermine the protection of people from losses they cause. Standards such as the defectiveness of a product in the Product Liability Directive ensure that courts can determine ex post what socially desirable actions should be undertaken. Large generative AI models like ChatGPT demonstrate how difficult it is for public authorities to choose a rule-driven approach.

## Other Developments

### *European Union*

# New EU rules for a Common Charger for Electronic Devices

*By Olia Kanevskaia*

On November 23, 2022, the European Union (“EU”) adopted the Directive 2022/2380 that mandates a common, EU-wide charger for electronic equipment (“the Common Charger Directive”).<sup>54</sup> The Directive prescribes the USB Type-C port as a mandatory standard for wired charging for a range of devices.

The new law amends the Radio Equipment Directive that established a framework for placing of radio and telecommunications equipment on the EU markets.<sup>55</sup> The legislation was passed after the Council’s and European Parliaments’ approval of the European Commission’s proposal that was introduced in September 2021, and is in force as of December 2022. The EU Member States are required to transpose the

Common Charger Directive into their national laws by December 28, 2023.

### Objectives of the Directive

The new Directive mainly pursues two objectives: 1) the economic objective of the EU internal market and 2) the EU environmental objectives of reducing CO2 emissions and electronic waste. The economic objective is prevailing, since the legal basis for the Common Charger Directive is harmonization for the purpose of the proper functioning of the EU internal market.<sup>56</sup>

The new Directive harmonizes the EU-wide communication protocols and interfaces for wired chargers used among others, in mobile phones, keyboards and laptops. As follows from the recitals, fragmentation of the EU market for radio equipment due to different national regulations and practices risks affecting cross-border trade and brings into jeopardy the functioning of the EU internal market.<sup>57</sup>

Furthermore, the Common Charger Directive aims to reduce electronic waste and greenhouse gas emissions that are the result of production and disposal of different electronic chargers. The Directive thus fits

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<sup>54</sup> Directive (EU) 2022/2380 of the European Parliament and of the Council of 23 November 2022 amending Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment, OJ L 315

<sup>55</sup> Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the

harmonization of the laws of the member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC, OJ L 153

<sup>56</sup> Article 114 TFEU

<sup>57</sup> Recitals 7 and 8 Common Charger Directive

among the recent EU legislative initiatives aiming to boost circular economy.<sup>58</sup>

While the Directive does not explicitly list “consumer protection” as one of its objectives, it makes frequent references to consumer benefits and convenience from a common charger.

### Wired charging standards

Electronic devices can be charged through cables or wires that are plugged into the device from one side, and into the power outlet from another. Connectors for wired chargers are not harmonized across different categories of radio and telecommunications equipment: while most devices support USB Type-C connectors, iPhones famously run on the thunderbolt lightning cable. The type of connector – in other words, a standard for wired charging, – is typically determined by the market, rather than by law.

The USB standards are developed by the USB Implementers Forum – a global non-profit organization dedicated to the making, testing and promoting USB technologies. The USB Type-C standard is also endorsed as an international standard by the International Electrotechnical Commission (“IEC”) and transposed into a European standard by the European Committee for

Electrotechnical Standardization (CENELEC).<sup>59</sup> The USB Type-C standard is widely used for different types of devices; yet, this standard, and its international and European implementations, in principle remains voluntary.<sup>60</sup>

The EU has been restating the importance of compatibility between wired chargers for quite a while, but until recently, it was mainly relying on the industry to agree on common rules. In 2009, fourteen major phone manufacturers, including Samsung, LG and Apple, signed a voluntary commitment to develop a common charging solution in a form of Memorandum of Understanding (“MoU”).<sup>61</sup> While since that time, many devices have indeed adopted Micro USB or, later, the USB Type-C standard as a wired charger connector, the MoU still allowed for the existence of proprietary charging interfaces like Apple’s thunderbolt. Attempts in European standardization committees to agree on a common connector seemed to have reached an impasse, and the voluntary approach resulted in many frustrations for the European legislator and consumer alike.

Upon the expiration of the MoU in 2014, the European Commission launched two impact assessment studies assessing the potential for implementing a common solution for wired charges, followed by a resolution on a common charger for mobile radio

<sup>58</sup> Recital 3 Common Charger Directive

<sup>59</sup> European Standard EN IEC 62680-1-3:2021 ‘Universal serial bus interfaces for data and power – Part 1-3: Common components – USB Type-C® Cable and Connector Specification’

<sup>60</sup> Case C-613/14, *James Elliott Construction Ltd v. Irish Asphalt Ltd* [2006] para 53

<sup>61</sup> MoU regarding Harmonisation of a Charging Capability for Mobile Phones (June 5<sup>th</sup>, 2009)

equipment adopted by the European Parliament in 2020.<sup>62</sup> This eventually led to the Commission's proposal to amend the Radio Equipment Directive and to mandate the USB Type-C standard as EU-wide standard for electronic devices. Similar requirements may be adopted for wireless chargers in the near future.<sup>63</sup>

### Key requirements of the new Directive

Article 3 of the Directive mandates a USB Type-C charger for a list of electronic equipment, including mobile phones, tables, headsets, keyboard, e-readers and laptops.<sup>64</sup> This means that the devices should be manufactured already with a USB-C connector to be legally marketed in the EU. The European Commission reserves the right to amend the list of equipment that has to comply with the USB Type-C charger in the light of scientific and technological progress or market developments. The listed equipment should comply with the mandated wired charging requirement by December 28, 2024; for laptops, this deadline is April 28, 2026.

The Commission may further adopt rules for charging interfaces and communications protocols for equipment that can be charged by means other than wired charging. This

includes requesting the European standardization organizations to develop harmonized standards for charging interfaces and communications protocols for such equipment. Harmonized standards are voluntary, but compliance with them grants presumption of compliance with European legislation.

When adopting or amending the rules for equipment charged by either wired or other means of charging, the European Commission should take into account the market acceptance of technologies under consideration, consumer convenience, and the reduction of environmental waste and market fragmentation. According to Article 3 (4) of the Directive, these objectives are presumed to be met by technical specifications that are based on relevant available international or European standards. The Directive, however, does not explain what it means by "being based on" and "relevant" or "available" standards. If such standards do not exist, or if the Commission determines that they do not meet the required objectives in an optimal manner, the Commission may develop its own technical specifications: this is in line with the Commission's power to develop "common specifications" under the new legislation that heavily relies on harmonized standards.<sup>65</sup>

<sup>62</sup> European Parliament resolution of 30 January 2020 on a common charger for mobile radio equipment (2019/2983(RSP)) OJ C 331

<sup>63</sup> Recital 13 Common Charger Directive

<sup>64</sup> Article 3(4) and Annex Ia Part I Common Charger Directive

<sup>65</sup> See, for example, Article 41 of the Communication (COM)2021 206 final from the Commission of 21 April 2021 on a Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts

Furthermore, consumers should also be able to purchase electronic equipment without any charging device,<sup>66</sup> provided that the economic operators clearly indicate on a label whether or not the charger is included.<sup>67</sup> The Commission will monitor the extent to which this “unbundling” of charging devices from the radio equipment needs to be made mandatory.<sup>68</sup>

## Outlook

The new Directive was met with enthusiasm by consumers, who will not need to purchase a new charger every time they buy a new electronic device. This will also reduce switching costs and prevent consumer lock-in in particular technologies or equipment. The disposal of wired chargers is also likely to be reduced, contributing to the EU’s environmental goals.

In turn, the requirement of a mandated standard for wired chargers does not sit well with some equipment manufacturers. For Apple, the new law means re-designing their products to comply with the EU legal requirements. Furthermore, many companies oppose the approach of standards and technologies mandated “top down”, since the technology selection typically occurs through industry rather than legislature. The danger is that while pursuing the objective to achieve greater interoperability, the EU will use this Directive as a precedent to

intervene in market processes and by this means, will stifle innovation and technological advancement.

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<sup>66</sup> Article 3a Common Charger Directive

<sup>67</sup> Articles 10(8) 12(4) and 13(4) Common Charger Directive

<sup>68</sup> Article 47 Common Charger Directive

## Other Developments

### *European Union*

# A Legal-Technical Basis for a Computational Transatlantic Trade and Investment Partnership (TTIP) Agreement

*By Craig Atkinson*

With the emergence of new modes of governance, this article<sup>69</sup> specifies a legal-technical basis – background, analytical structure, sources, methods, and research

<sup>69</sup> Based on the introduction to the forthcoming TTLF Working Paper, *A Transatlantic Trade and Investment Partnership 'version 2.0'? International Commercial Rules in the Age of Computational Law*.

<sup>70</sup> See *EU negotiating texts in TTIP*, EUROPEAN COMMISSION, [https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/united-states/eu-negotiating-texts-ttip\\_en](https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/united-states/eu-negotiating-texts-ttip_en).

<sup>71</sup> To pursue more limited and specific tariff negotiations on industrial goods, see Council Decision 6052/19, Authorising the opening of negotiations with the United States of America for an agreement on the elimination of tariffs for industrial goods, 2019.

<sup>72</sup> Gross Domestic Product (GDP). These and other estimates are subject to conjecture. See Werner Raza et al., *ASSESS\_TTIP: Assessing the Claimed Benefits of the Transatlantic Trade*

questions – to advance the notion of a 'computable' transatlantic trade agreement.

## Background

Negotiations for a Transatlantic Trade and Investment Partnership (TTIP)<sup>70</sup> agreement between the European Union (EU) and the United States (US) began in 2013 and ended without conclusion in 2016. By April 2019, the EU had rendered its negotiating directives "obsolete and no longer relevant."<sup>71</sup> While no agreement was finalized, terms under the TTIP 'version 1.0' were expected to add €120 billion to the output of the EU, €90 billion to the US economy, and €100 billion to the world economy.<sup>72</sup> Now, the stakes associated with EU-US cooperation are even higher: cross-border data flows<sup>73</sup> have become a greater driver / enabler of international commercial activity, the digitalization<sup>74</sup> of trade has accelerated, and

*and Investment Partnership 1-5* (Österreichische Forschungsstiftung für Internationale Entwicklung – ÖFSE Oct. 2014).

<sup>73</sup> See Mira Burri, *Data Flows versus Data Protection: Mapping Existing Reconciliation Models in Global Trade Law*, in LAW AND ECONOMICS OF REGULATION 129 (Klaus Mathis & Avishalom Tor eds., Springer International Publishing 2021). See also OECD, *Cross-Border Data Flows: Taking Stock of Key Policies and Initiatives* (Dec. 2022). See further Javier López González et al., *A Preliminary Mapping of Data Localisation Measures*, OECD Trade Policy Papers (OECD Publishing 2022).

<sup>74</sup> The phase of 'digital transformation' that refers to process improvement(s). See Peter C. Verhoef et al., *Digital Transformation: A Multi-disciplinary Reflection and Research Agenda*, 122 JOURNAL OF BUSINESS RESEARCH 889 (Jan. 2021).

the global ‘digital economy’ continues to expand.<sup>75</sup>

*Re-connecting for ‘Digital Cooperation’: The Trade and Technology Council (TTC)*

To re-engage and coordinate responses, the EU-US Trade and Technology Council (TTC)<sup>76</sup> was established in 2021 and seeks to enhance bilateral relations by, *inter alia*, mitigating technical barriers between the jurisdiction(s),<sup>77</sup> strengthening transatlantic supply chains, fostering cooperation on certain data issues,<sup>78</sup> setting standards, promoting digital tools for small business inclusion, and mutually reforming the rules-

<sup>75</sup> Amid expansion, EU-US digital trade flows are the “world’s most extensive”, yet differing policy stances (e.g., on data protection) caused the TTIP ‘version 1.0’ negotiations to fail. See Emily Jones et al., *The UK and Digital Trade: Which Way Forward?* (Oxford University Blavatnik School of Government Feb. 2021).

<sup>76</sup> See *EU-US Trade and Technology Council Inaugural Joint Statement*, EUROPEAN COMMISSION (Sept. 29, 2021), [https://ec.europa.eu/commission/presscorner/detail/e%20n/statement\\_21\\_4951](https://ec.europa.eu/commission/presscorner/detail/e%20n/statement_21_4951).

<sup>77</sup> Considering the potential for barriers within and across the supranational EU; the national and sub-national systems of EU Member States; and the US federal / ‘state’ system.

<sup>78</sup> In the 1980s, the US was the first jurisdiction to ‘govern’ data flows. See Susan A. Aaronson, *The Digital Trade Imbalance and Its Implications for Internet Governance*, GLOBAL COMMISSION ON INTERNET GOVERNANCE (Feb. 2016). More recently, the EU and US have included varying language on data governance issues in bilateral / regional trade agreements, see Mira Burri, *Digital Trade: In Search of Appropriate Regulation*, in JUSTICE, TRADE, SECURITY, AND INDIVIDUAL FREEDOMS IN THE DIGITAL SOCIETY 213 (Fernando Esteban de la Rosa et al. eds., Thomson Reuters Sep. 2021). See also Neha Mishra, *Building Bridges: International Trade*

based multilateral trading system. With limited progress at the World Trade Organization (WTO), negotiations in other fora have achieved some success in devising wholly new frameworks, dedicated chapters in trade agreements, and specific provisions to bridge ‘analog-to-digital’ gaps.<sup>79</sup>

Yet, in identifying and attempting to reconcile policy differences via a thematic Working Group (WG) model,<sup>80</sup> TTC statements to “update the rules for the 21st century economy”<sup>81</sup> are not binding commitments. In lieu of a formal, comprehensive, and modern

*Law, Internet Governance, and the Regulation of Data Flows*, 52 VAND. J. TRANSNAT’L L. 463 (2019).

<sup>79</sup> See Mira Burri & Thomas Cottier, *Introduction: Digital technologies and international trade regulation*, in TRADE GOVERNANCE IN THE DIGITAL AGE: WORLD TRADE FORUM 1–14 (2012).

<sup>80</sup> As a theme, transatlantic transfers of personal data fall outside of the scope of the TTC and have been negotiated separately under the ‘EU-US Data Privacy Framework’ (DPF). See *Opinion 5/2023 on the European Commission Draft Implementing Decision on the Adequate Protection of Personal Data under the EU-US Data Privacy Framework* (European Data Protection Board Feb. 2023). See also Hendrik Mildebrath, *Reaching the EU-US Data Privacy Framework: First Reactions to Executive Order 14086*, No. PE 739.261 (European Parliamentary Research Service - EPRS Dec. 2022).

<sup>81</sup> See *U.S.-EU Establish Common Principles to Update the Rules for the 21st Century Economy at Inaugural Trade and Technology Council Meeting*, THE WHITE HOUSE (Sept. 29, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/29/fact-sheet-u-s-eu-establish-common-principles-to-update-the-rules-for-the-21st-century-economy-at-inaugural-trade-and-technology-council-meeting>.



EU-US trade agreement,<sup>82</sup> maintenance of the *status quo* is both a risk and an opportunity cost.<sup>83</sup>

*Enter: Applied Computational Law*

Concurrently, applications of Computational Law (CompLaw)<sup>84</sup> are emerging that allow for the expression and online publication of digital versions of rules<sup>85</sup> as algorithms<sup>86</sup> to

improve accessibility<sup>87</sup> for humans and support operationalization<sup>88</sup> by machines. Computational Law is that branch of legal informatics concerned with “the mechanization of legal analysis” and “the codification of regulations in precise, computable form.”<sup>89</sup> The field is loosely defined by, often interrelated, modelling techniques and associated sub-branches, including ‘Big Data Law’<sup>90</sup>

<sup>82</sup> The scope of ‘modern’ trade agreements has expanded to cover new rules and their harmonization (e.g., data, intellectual property, health and safety, etc.). See Dani Rodrik, *What Do Trade Agreements Really Do?*, 32 JOURNAL OF ECONOMIC PERSPECTIVES 73 (Jan. 2018).

<sup>83</sup> On the perils of several meanings of fragmentation (e.g., legal/regulatory and technical), see Simon J. Evenett & Johannes Fritz, *Emergent Digital Fragmentation: The Perils of Unilateralism - A Joint Report of the Digital Policy Alert and Global Trade Alert* (CEPR Press 2022). See also ICC 2023 Trade Report: *A Fragmenting World* (ICC Apr. 2023). See further Panthea Pourmalek et al., *As Digital Trade Expands, Data Governance Fragments*, CENTRE FOR INTERNATIONAL GOVERNANCE INNOVATION - CIGI (Feb. 9, 2023), <https://www.cigionline.org/articles/as-digital-trade-expands-data-governance-fragments>. In the context of supply chains, see Rebecca Harding, “Fragmentation”, *Trade, and Supply Chain Resilience*, REBECCANOMICS (Apr. 17, 2023), <https://rebeccanomics.com/rebeccas-blog/f/%E2%80%9Cfragmentation%E2%80%9D-trade-and-supply-chain-resilience>.

<sup>84</sup> As first described in 2005 by Stanford University’s Nathaniel Love and Michael Genesereth in their seminal conference paper, see Nathaniel Love & Michael Genesereth, *Computational Law*, Proceedings of the 10th international conference on Artificial intelligence and law - ICAIL ‘05 205 (ACM Press 2005).

<sup>85</sup> See RONALD G. ROSS, *RULES: SHAPING BEHAVIOR AND KNOWLEDGE* (Business Rule Solutions, LLC 1st ed. Jan. 2023).

<sup>86</sup> See Robert Kowalski, *Algorithm = Logic + Control*, 22 COMMUNICATIONS OF THE ACM 424 (July 1979). See further Joseph Potvin, *Data With Direction: Design Research Leading to a System Specification For ‘An Internet of Rules’* (Université du Québec en Outaouais 2023). In this form, ‘Rules as Data’ supplement normative expressions in natural languages and, while possibly ‘*de jure*’, are not to be considered as ‘law’ per se.

<sup>87</sup> Accessibility implies both access and capability (e.g., to understand and/or utilize data/information).

<sup>88</sup> The meanings of operationalization and application vary by discipline (e.g., law, computer science, etc.). See Meng Weng Wong, *Rules as Code - Seven Levels of Digitisation* (Singapore Management University Yong Pung How School of Law Apr. 2020).

<sup>89</sup> See Michael Genesereth, *Computational Law: The Cop in the Backseat*, CODEX — THE STAN. CTR. FOR LEGAL INFORMATICS (2015), <http://logic.stanford.edu/publications/genesereth/complaw.pdf>. See also Michael Genesereth, *What is Computational Law?* CODEX — THE STAN. CTR. FOR LEGAL INFORMATICS (Mar. 10, 2021), <https://law.stanford.edu/2021/03/10/what-is-computational-law>.

<sup>90</sup> Concerned with, “data-driven approaches to legal analysis... legal scholarship that leverages big data analytics—specifically, advances in statistical artificial intelligence, including machine learning, natural language processing, and deep learning—to identify patterns in legal information, to draw conclusions, to make policy recommendations, and to predict legal outcomes.” See Roland Vogl, *Introduction to the Research Handbook on Big Data Law*, in

analytics and ‘Algorithmic Law’<sup>91</sup> efforts to express the logic of rules as computable proxies.<sup>92</sup> With the potential to assist human decision-making<sup>93</sup> (e.g., through legal expert systems)<sup>94</sup> and process automation (e.g., via compliance automation systems), Computational Law may also address private rights and obligations: computable

contracts,<sup>95</sup> financial rules, and ‘business rules’ (e.g., inventory, pricing, etc.).

### Analytical Structure and Sources<sup>96</sup>

As instruments begin to refer to governance<sup>97</sup> *for*, *of*, and *by* information and

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RESEARCH HANDBOOK ON BIG DATA LAW 1–8 (Edward Elgar Publishing 2021).

<sup>91</sup> These approaches involve “transforming legislation and other legal sources into algorithms,” see Dag Wiese Schartum, *From Algorithmic Law to Automation-Friendly Legislation*, COMPUTERS & LAW (Society for Computers and Law Aug. 2016), <https://www.scl.org/articles/3716-from-algorithmic-law-to-automation-friendly-legislation>. See also Megan Ma, *Story of a Legal Codex(t) Writing Law in Code* (École de Droit de Sciences Po 2021). This scholarship does not assume a ‘code’ or ‘programming language for the law’ based approach.

<sup>92</sup> Similarly bifurcated by Mireille Hildebrandt as ‘data-driven’ and ‘code-driven’. See *Data-driven ‘law’*, COHUBICOL, <https://www.cohubicol.com/about/data-driven-law>. See also *Code-driven ‘law’*, COHUBICOL, <https://www.cohubicol.com/about/code-driven-law>. Such categorizations are solely for the purposes of comparison and many approaches involve a ‘hybrid’ of techniques. See L. Thorne McCarty, *A Language for Legal Discourse is All You Need*, MIT COMPUTATIONAL LAW REPORT (2022), <https://bit.ly/3ewZzh1>. See also *Bridging the Gap between Machine Learning and Logical Rules in Computational Legal Studies* (Mar. 2022), <https://youtu.be/rBPadM9tyNo>. The use of the word ‘proxy’ is in place of any dominant way to describe the models, expressions, representations, etc. of natural language rules in computable form.

<sup>93</sup> Where possible (*i.e.*, when not referring to a particular legal text or jurisdiction-specific jargon), this scholarship consciously avoids the term ‘automated decision-making’ (ADM) and considers that only humans can make informed ‘decisions’ and consent to action/inaction (*i.e.*,

subject to audit of any algorithm’s logic and control components).

<sup>94</sup> See, e.g., Richard E. Susskind, *Expert Systems in Law: A Jurisprudential Approach to Artificial Intelligence and Legal Reasoning*, 49 MOD. L. REV. 168 (Mar. 1986).

<sup>95</sup> See Harry Surden, *Computable Contracts*, 46 U.C. DAVIS L. REV. 72 (2012). See also SMART LEGAL CONTRACTS: COMPUTABLE LAW IN THEORY AND PRACTICE (Jason Allen & Peter Hunn eds., Oxford University Press 1st ed. Apr. 2022).

<sup>96</sup> Sources of law are recognized by jurisdiction and under international law by the International Court of Justice (ICJ). See Statute of the International Court of Justice, art. 38, ¶ 1, concluded at San Francisco June 26, 1945, entered into force Oct. 24, 1945, T.S. 993. Although there is no consensus on the definition of a ‘rule’, it is generally understood that legal texts (e.g., treaties, legislation, regulations, case law, and contracts) are the source of norms, rules, and guidelines. See *LegalRuleML Core Specification Version 1.0* (Organization for the Advancement of Structured Information Standards – OASIS Aug. 2021), <https://docs.oasis-open.org/legalruleml/legal-ruleml-core-spec/v1.0/legalruleml-core-spec-v1.0.html>.

<sup>97</sup> Broadly, governance refers to, “making decisions and exercising authority to guide the behaviour of individuals and organizations. Governance is commonly achieved by the creation and enforcement of explicit rules... less explicit social norms, guidelines, policies, or the creation of defined command structures.” See *Agile Governance: Reimagining Policy-making in the Fourth Industrial Revolution* 16 (World Economic Forum Jan. 2018).

communications technology (ICT),<sup>98</sup> public and private branches of law can be used to construct a five-point legal-technical basis for a TTIP 'version 2.0'<sup>99</sup> with computational rules (and data sources) in parallel to its natural language, other texts, and associated systems:<sup>100</sup>

- First, by providing a '*chapeau*' of concepts and methods, it is possible to describe the nature of EU-US relations in the age of Computational Law and the Internet.

- Second, the identification of sources of public international law<sup>101</sup> – the WTO agreements, ongoing negotiations, plurilateral Joint Initiative (JI)<sup>102</sup> on E-commerce proposals, and legal instruments of the World Customs Organization (WCO) – assists in portraying the 'multi-lateral interface' for digital trade.<sup>103</sup>
- Third, to complement the scope of the TTC, it is necessary to compare existing and envisaged sources of EU and US trade, business, technology, and privacy

<sup>98</sup> Here, *for* refers to status (e.g., legal recognition of electronic documents), *of* relates to limitation (e.g., data protection regulations), and *by* implies operationalization (e.g., via the systems of governments and/or private individuals/entities). See *Governance Innovation: Redesigning Law and Architecture for Society 5.0*, MINISTRY OF ECON., TRADE & INDUSTRY (METI), <https://www.meti.go.jp/press/2020/07/20200713001/20200713001-2.pdf> (Japan).

<sup>99</sup> The TTLF Working Paper also exists as a 'living' GitHub project. See *TTIPv2*, [https://github.com/lexmerca/TTIPv2\\_ToC](https://github.com/lexmerca/TTIPv2_ToC).

<sup>100</sup> This includes a variety of 'systems' used in trade and commerce. For Customs, the EU and the US are pursuing modernization through 'single window' systems. See RECOMMENDATION AND GUIDELINES ON ESTABLISHING A SINGLE WINDOW TO ENHANCE THE EFFICIENT EXCHANGE OF INFORMATION BETWEEN TRADE AND GOVERNMENT: RECOMMENDATION NO. 33 (United Nations Centre for Trade Facilitation and Electronic Business 2005). In the EU, see Parliament and Council Regulation 2022/2399, Establishing the European Union Single Window Environment for Customs, 2022 O.J. (L 317), 1. In the US, the single window for trade is the 'Automated Commercial Environment', see *ACE Portal Modernization*, US CUSTOMS AND BORDER PROTECTION, <https://www.cbp.gov/trade/automated/ace-portal-modernization>.

<sup>101</sup> Typically concerned with, "the relations of states, and states and state-created

international organizations, and increasingly states and individuals. The source of law here is mostly comprised of treaties and custom..." See *Volume I: The Foundations of Transnational Law* (Hofstra University School of Law 2012). See also Alan. O. Sykes, *The Inaugural Robert A. Kindler Professorship of Law Lecture: When is International Law Useful?*, 45 N.Y.U. J. INT'L L. & POL. (Mar. 2013), <https://law.stanford.edu/publications/the-inaugural-robert-a-kindler-professorship-of-law-lecture-when-is-international-law-useful>.

<sup>102</sup> Formerly known as the 'Joint Statement Initiative' (JSI) on E-commerce.

<sup>103</sup> Defined by the Organisation for Economic Cooperation (OECD)-WTO-International Monetary Fund (IMF) as trade that is 'digitally ordered' and/or 'digitally delivered', where digitally ordered is, "the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of received or placing orders" and digitally delivered reflects "international transactions that are delivered remotely in an electronic format, using computer networks specifically designed for the purpose." See HANDBOOK ON MEASURING DIGITAL TRADE (OECD-WTO-IMF 2020). Under the WTO system, see Robert Staiger, *Does Digital Trade Change the Purpose of a Trade Agreement?*, No. w29578 (National Bureau of Economic Research Dec. 2021).

law. This includes the many EU ‘digital policy’ initiatives.<sup>104</sup>

- Fourth, as discoverable in whole or in part in international agreements, legislation, regulations, and private contracts, it is essential to frame the institutional sources of ‘transnational commercial law’:<sup>105</sup> the principles, conventions, and model laws of the United Nations Commission on International Trade Law (UNCITRAL) and the International Institute for the Unification of Private Law (UNIDROIT). Relevant instruments of the Hague Conference on Private International Law (HCCH) and the International

Chamber of Commerce (ICC) must also be considered.

- Fifth, because ‘*de facto*’ and ‘*de jure*’ standards<sup>106</sup> facilitate the development of digital infrastructure, their recognition and classification present technical means to ‘seize the CompLaw opportunity’ for transatlantic trade.

## Methods and Research Questions

Drawing from regime theory,<sup>107</sup> accounting for Commercial Law Intersections (CLIs),<sup>108</sup>

<sup>104</sup> For example, the EU electronic IDentification, Authentication and trust Services (eIDAS) regulation, the Digital Markets Act (DMA), the Digital Services Act (DSA), the Data Governance Act (DGA), and the Data Act.

<sup>105</sup> Here, transnational commercial law is, “that set of rules, from whatever source, which governs international commercial transactions and is... derived from international instruments of various kinds, such as conventions and model laws, and from codification of international trade usage adopted by contract.” See ROYSTON MILES GOODE ET AL., *TRANSNATIONAL COMMERCIAL LAW: TEXT, CASES, AND MATERIALS* (Oxford University Press 2015). In relation to ‘transnational data governance’ issues, see Douglas W. Arner et al., *The Transnational Data Governance Problem*, 37 *BERKELEY TECH. L.J.* 623 (Berkeley Technology Law Journal 2022).

<sup>106</sup> EMMANUELLE GANNE & HANNAH NGUYEN, *STANDARDS TOOLKIT FOR CROSS-BORDER PAPERLESS TRADE: ACCELERATING TRADE DIGITALIZATION THROUGH THE USE OF STANDARDS* (ICC & World Trade Org. 2022).

<sup>107</sup> See Stephen D. Krasner, *Structural Causes and Regime Consequences: Regimes as Intervening Variables*, 36 *INTERNATIONAL ORGANIZATION* 185 (1982). See also Anu Bradford, *Regime Theory*, *MAX PLANCK ENCYCLOPEDIA OF*

*PUBLIC INTERNATIONAL LAW* (Oxford University Press 2007). See further Jeswald W. Salacuse, *Making transnational law work through regime-building*, in *MAKING TRANSNATIONAL LAW WORK IN THE GLOBAL ECONOMY* 406–430 (Pieter H. F. Bekker, Rudolf Dolzer, & Michael Waibel eds., 2010).

<sup>108</sup> Where business and commercial law have, “grown into a dense thicket of subject-specific branches that govern a broad range of transactions and corporate actions. When one of such dealings or activities falls concurrently within the purview of two or more of these commercial law branches... an overlap materializes... The unharmonious convergence of commercial law branches generates failures in coordination that both increase transaction costs and distort incentives for market participants.” See Giuliano G. Castellano & Andrea Tosato, *Commercial Law Intersections*, 72 *HASTINGS L.J.* (Apr. 2021), [https://repository.uchastings.edu/hastings\\_law\\_journal/vol72/iss4/2](https://repository.uchastings.edu/hastings_law_journal/vol72/iss4/2). In advancing the conceptualization of CLIs, see further Douglas W. Arner et al., *Financial Data Governance: The Datafication of Finance, the Rise of Open Banking and the End of the Data Centralization Paradigm*, 117 *UNIVERSITY OF HONG KONG FACULTY OF LAW RESEARCH PAPER* (Feb. 2022).

and recognizing interplay with ‘constitutional’<sup>109</sup> and administrative law, the analytical structure may be employed to answer two questions:

1. Which sources contain rules that may be appropriate<sup>110</sup> for algorithmic representation?
2. How do these and other sources inform the legal environment for transatlantic digital trade?

Ultimately, by taking a comparative ‘Law + Technology’<sup>111</sup> approach to involve different legal subjects<sup>112</sup> and branches, it is feasible to hypothesize the composability<sup>113</sup> of hard and soft-law<sup>114</sup> to realize commercial activity under a ‘born digital’ transatlantic trade agreement.<sup>115</sup> Building on works in other jurisdictional contexts – transpacific<sup>116</sup> and

pan-Africa<sup>117</sup> – outputs of the specified analytical structure are set to contribute to the advancement of legal informatics at the nexus of EU-US trade and technology policy regimes.

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<sup>109</sup> The EU has not formally ratified a ‘constitution’ and is ‘constituted’ by treaties and its ‘*acquis communautaire*’.

<sup>110</sup> The extent of ‘appropriateness’ can be analyzed through dimensions related to discretion, risk, and how ‘practicable’ a rule is.

<sup>111</sup> The ‘Law + Technology’ approach builds on complexity science and other disciplines / frameworks (e.g., ‘Code / Data as Law’ and ‘Law as Code / Data’) to consider both the issues and positive contributions that technology can bring to society. See Thibault Schrepel, *Law + Technology (v2.0)*, CODEX — THE STAN. CTR. FOR LEGAL INFORMATICS WORKING PAPER SERIES (Jan. 2023).

<sup>112</sup> See Laurence Diver, 3.4.2 *Legal Subject, in* TEXT-DRIVEN NORMATIVITY (CoHuBiCoL Jul. 2021). In international law, ‘persons’ may be primary (e.g., states, international organizations) or secondary (e.g., corporations, individuals).

<sup>113</sup> The modular assembly of components within any functional system design.

<sup>114</sup> Respectively understood as ‘binding’ and ‘non-binding’ instruments, yet perspectives vary among scholars (e.g., on the nature of enforceability) and across disciplines. See Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INTERNATIONAL ORGANIZATION 421–456 (2000).

<sup>115</sup> Craig Atkinson, *Africa’s Potential ‘Born Digital’ Trade Agreement*, 1 INTERNATIONAL TRADE FORUM 28–29 (International Trade Centre 2019).

<sup>116</sup> Craig Atkinson & Nicolás Schubert, *Augmenting MSME Participation in Trade with Policy Digitalisation Efforts: Chile’s Contribution to ‘An Internet of Rules,’* 13 TRADE L. & DEV. 80 (2021).

<sup>117</sup> Craig Atkinson & Joseph Potvin, *Implementing the African Continental Free Trade Area: A Simple, Scalable, and Fast Computational Approach for Algorithmic Governance*, in SUSTAINABLE DEVELOPMENT IN POST-PANDEMIC AFRICA: EFFECTIVE STRATEGIES FOR RESOURCE MOBILIZATION (Routledge Oct. 2022).

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