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ARTICLE

The Emergence of Principles and Best Practices on Digital Assets: Proprietary Rights, and Enforcement

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Abstract

Digital assets have burst onto global markets as a new class of assets for investment, trade and finance. Their growing popularity and economic relevance have been, however, accompanied by legal uncertainties and regulatory concerns. Together with domestic and regional responses, a strong case for international harmonisation is to be made. This Paper explores the emergence of principles and best practices on proprietary rights, insolvency and enforcement as a crucial process of international legal harmonisation of rules for digital assets.

Keywords: Digital assets; international principles; tokens

I. Introduction: Setting the scene

The irruption of digital assets in the global market has revolutionised the way to create, represent, and transfer value in contemporary economy. Digital assets and tokens of various nature, purpose and content have gained enormous popularity, public visibility, and economic relevance in international trade. As a new class of assets, digital assets are increasingly held by companies and individuals in their investment portfolios, are intensively used by market players as collateral in secured transactions to raise funds and access to finance, and have triggered the emergence of a diversity of intermediaries and related services providers (custodians, crypto lenders, wallet service providers) in a burgeoning global market.

Their increased popularity and worldwide usage do, however, contrast a growing perception[1] of risk,[2] a significant legal uncertainty related to their regulatory regime and legal characterisation, and several concerns that have aroused preoccupation among public bodies, regulators and supervisory authorities, and attracted the attention of legislators.

[1] Framed within the traditional financial system risk narrative that is anchored in the notion of market failure, conceived as a deviation, in economic terms, from an optimal status of recourse-allocation equilibrium in a free, competitive market. As inspiringly proposed by Giuliano Castellano, "Don't Call It A Failure: Systemic Risk Governance for Complex Financial Systems" (2024) *Law & Social Inquiry* 4–5, 1-42, this approach to systemic risk in financial regulation misses a system-wide perspective and fails the embrace the idea that finance is a complex social system.

[2] Huei-Wen Teng, *et al,* "Mitigating Digital Asset Risks" (October 13, 2023) at https://ssrn.com/abstract=4594467 or https://doi.org/10.2139/ssrn.4594467.

Given the inherently international scope of the market and the natural cross-border aspects of diverse transactions involving digital assets, a response based on common principles and internationally harmonised solutions is instrumental to enhance predictability, stability and certainty in the global market. Thus, along with certain domestic[3] and regional[4] legislative and regulatory responses, that vary substantially among each other and oftentimes differ in policy goals,[5] harmonised principles and best practices are started to emerge and become established as a result of various initiatives led by international organisations and formulating agencies for the unification of international trade law – UNCITRAL (United Nations Commission for International Trade Law),[6] UNIDROIT (International Institute for the Unification of Private Law),[7] HCCH (Hague Conference on Private International Law)[8].

Interestingly, these increasingly harmonised principles and emerging best practices are crystalising in the realm of private law, while domestic and regional responses are primarily of a regulatory character with a special focus on financial and monetary markets. The formulation and consolidation of these private-law principles and best practices are of paramount importance. They lay the foundations for building up a still-under-construction legal regime for digital assets. Although regulatory instruments may pursue their own policy objectives and to that end specific and fit-for-purpose requirements, procedures, and mechanisms are deployed, a coherent, consistent, and sound legal and regulatory regime for digital assets depend upon solving the basic and core questions about digital assets as "assets" with economic relevance.[9] Their "property status," the legal characterisation for the purposes of creating security interests to access finance, their legal treatment in insolvency or the complexities raised in enforcement where digital assets are involved are decisive in developing a well-functioning market, generating trust and ensuring predictability.

This Paper dives into these emerging soft-law instruments consisting of sets of principles and best practices to identify the substantive commonalities and extract the key policy solutions that start to permeate the international response to the digital assets phenomenon from a private law perspective.

In this exploration in the international scene, the first pivotal instrument is the UNIDROIT *Principles on Digital Assets and Private Law* in 2023 (DAPL Principles)[10] where, despite their harmonising objectives are less ambitious,[11] basic conceptual and policy components are laid down (*infra* II). The notion of "digital assets" is broadly defined for

[3] World Economic Forum, "Cryptocurrency regulations are changing across the globe," 2 May 2024.

[4] Notably, the Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 (Text with EEA relevance). PE/54/2022/REV/1; OJ L 150, 9.6.2023, p. 40–205.

[5] World Economic Forum, *White Paper. Pathways to the Regulation of Crypto-Assets. A Global Approach,* May 2023, https://www3.weforum.org/docs/WEF_Pathways_to_the_Regulation_of_Crypto_Assets_2023.pdf.

[6] UNCITRAL: www.uncitral.org.

[7] UNIDROIT: www.unidroit.org.

[8] HCCH: www.hcch.net.

[9] Giuliano Castellano and Marek Dubovec, "Global Regulatory Standards and Secured Transactions Law Reforms: At the Crossroad between Access to Credit and Financial Stability" (2018) 41(3) *Fordham Int'l L.J.,* 531–588.

[10] The DAPL Principles were adopted by the UNIDROIT Governing Council in May 2023. The text is available at https://www.unidroit.org/instruments/digital-assets-and-private-law/ together with their preparatory works, and related information on the members and observers of the Working Group and the Drafting Committee.

[11] DAPL Principles have a limiting, albeit important, harmonisation goal. Frequently, the DAPL Principles refer to "other law" (Principle 3) – as per the definitions provided for by Principle 2, while "Principles law" means any part of a State's law which implements or is consistent with the DAPL Principles (3); the "other law" means a State's law to the extent that it is not Principles law (4). Thus, unlike other international harmonisation instruments, the harmonising aspiration is more limited and responds to a pragmatic and cautious view.

private law purposes with a wide, all-embracing definition that is based on the central concept of "control." This concept of "control" plays a primary role in the configuration of a private-law legal regime for digital assets.[12] Control as a solution for creating and transferring rights and interests in assets has been previously recognised in various instruments with a different extent[13] – for electronic transferable records,[14] for electronic negotiable warehouse receipts,[15] for funds credited to a bank account.[16] Thus, Part II is devoted to the notion of "digital assets" for the establishment of a global uniform private-law legal regimen and the central concept of "control." Around this concept, rules on the holding, transfer and use as collateral of digital assets for secured transactions can be formulated.

In a second layer, as the market for digital assets grows in size and in diversity, transactions, commercial practice and also litigation involving digital assets are equally expanding and increasing. In such circumstances, creditors want to be reassured that they can effectively enforce their rights, even if these are related to such class of assets. Enforcement on digital assets proves to be in practice challenged by specific complexities arising from the functional, structural and operational characteristics of digital assets. As a consequence, in addition to the factors that may traditionally render enforcement proceedings costly, ineffective, or unsuccessful, creditors may face additional costs, uncertainties or inefficiencies in enforcing their rights against digital assets. Therefore, although new enforcement rules for digital assets might not be necessary in all cases, there is a need to ensure the effectiveness of the enforcement of rights on digital assets. Best practices for helping courts, enforcement agents, legislators, practitioners, and parties can facilitate the accommodation of existing rules, measures, and procedures to the digital-assets realm. This is the main goal of the ongoing project at UNIDROIT on *Best Practices for Effective Enforcement*[17] (BPEE project),[18] as well as the in-progress work of ELI on *Access to Digital Assets*.[19] Part III sketches the BPEE project's premises and findings and highlights some of their main solutions.

[12] Also crucial in the ELI Principles on the Use of Digital Assets as Security – available at https://www.europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Principles_on_the_Use_of_Digital_Assets_as_Security.pdf – (hereinafter, ELI Principles DAS), but with a differing view in the definition (Definitions, a) of ELI Principles DAS) where the notion of control is approached not only as a factual concept.

[13] Marek Dubovec, "Toward Decentralized Commercial Law for Digital Assets" (2022) 19 *Nw. J. Tech. & Intell. Prop.,* 239-288, traces the use of control in the Uniform Commercial Code and provides an enlightening explanation of its functional evolution until the digital assets (at pp. 273–276).

[14] UNCITRAL Model Law on Electronic Transferable Records, 2017 (hereinafter, MLETR). Text available at https://uncitral.un.org/en/texts/ecommerce/modellaw/electronic_transferable_records.

[15] UNCITRAL/UNIDROIT Model Law on Warehouse Receipts. The Model Law was adopted by UNCITRAL at its 57th session in New York, in July 2024. The Model Law was developed as a joint project of UNCITRAL and UNIDROIT, and its text was already approved by the UNIDROIT Governing Council at its 103rd session on 8–10 May 2024.

[16] UNCITRAL Model Law on Secured Transactions (2016), at https://uncitral.un.org/en/texts/securityinterests/modellaw/secured_transactions.

[17] For information on this project, and on the members and observers of the Working Group see https://www.unidroit.org/work-in-progress/enforcement-best-practices/.

[18] The author is an expert member of the UNIDROIT Working Group on Best Practices for Effective Enforcement - https://www.unidroit.org/work-in-progress/enforcement-best-practices/#1644493658788-9cb71890-334f. All views and opinions expressed in this paper are the personal ones of the author and do not represent the opinions of neither the Working Group nor any of its members.

[19] Update of the ELI project on Access to Digital Assets available at https://www.europeanlawinstitute.eu/projects-publications/current-projects/current-projects/eli-access-to-digital-assets/. The author is the co-reporter with Jos Huitdehaag of the ELI Project. All views and opinions expressed in this paper are the personal ones of the author and do not represent the opinions of neither ELI or its bodies nor any of the members of the project team and related committees.

Yet, from a private law perspective, there is a third facet where the expansion of digital assets in a global market is raising legal concerns and attracting legislators' attention. Despite initial promising growth figures, the global market for digital assets has shown high levels of volatility and, after reaching its peak in 2022, it plummeted to one third of its value in six months. In a context of difficult global macro-economic conditions, the decline of the market ("crypto winter"), with prolonged periods of pricing weakness, has aggravated the financial risks of all market participants and precipitated a cascade of insolvencies.[20] From those companies or individuals that have (significantly) invested in digital assets to the variety of intermediaries and service providers involved in the operation of the market[21] – such as lenders, custodians, or exchanges -, the market downturn has led to financial distress and a succession of insolvencies. This series of insolvencies in the market, some of them with a special media impact due to their magnitude, have revealed a number of regulatory challenges that policymakers and regulators realise that need to be addressed.[22] With a similar soft-law approach, UNCITRAL (Working Group V) is working on a toolkit for expedited civil asset tracing and recovery in insolvency proceedings (ATR).[23] The DAPL Principles also contain a section dedicated to the effect on insolvency on proprietary rights over digital assets and principles related to the insolvency of custodians and sub-custodians as defined by the DAPL Principles.

Finally, given the natural cross-border nature of digital assets holding, transfers, and enforcement, and their inherent 'digital character' that challenges traditional connecting factors, in particular, the role of location – such as *lex res sitae* -, private international law (PIL) rules are also under a profound review and consideration to ensure their adequacy or adaptability. This Paper is not dealing with these PIL aspects, but important and ambitious efforts are being made in this regard.[24] Emerging principles and harmonised solutions are desirable and expected.[25] To that end, a distinction between applicable law to private law aspects, in particular, proprietary rights, and the regulatory framework pertaining to the issuance, custody or negotiation of digital assets (or subclasses of digital assets) is to be made. While DAPL Principles (Principle 5) recognises party autonomy heading a model devised as a "waterfall" of factors (DAPL Principles, 0.14), to choose the law that governs

[20] The collapse in May 2022 of cryptocurrencies Luna and TerraUSD dragged Three Arrows Capita to its demise and triggered a series of subsequent downfalls of digital-assets lenders, hedge funds, and exchanges (Voyager, Celsius, BlockFi, FTX, etc) and the failure of crypto banks (Silvergate Bank, Signature Bank). Over the first semester of 2023, market participants that have survived the crypto winter have reacted with aggressive and substantial cost reductions and job cuts.

[21] On the relationship between an intermediary and its clients, and the implications for insolvency of the basis on which digital assets are held by the intermediary, Louise Gullifer, Henry Chong, Henry and Hin Liu, "Client-Intermediary Relations in the Crypto-Asset World· (23 September 2020) *University of Cambridge Faculty of Law Research Paper* No. 18/2021, at https://ssrn.com/abstract=3697946 or https://doi.org/10.2139/ssrn.3697946.

[22] ISDA, *Navigating Bankruptcy in Digital Assets Markets: Netting and Collateral Enforceability*, January 2023, (available at https://www.isda.org/a/mIxgE/Navigating-Bankruptcy-in-Digital-Asset-Markets-Netting-and-Collateral-Enforceability.pdf).

[23] For information on the ongoing work, https://uncitral.un.org/en/content/working-group-v-insolvency-law.

[24] "Proposal for Joint Work: HCCH-UNIDROIT Project on Law Applicable to Cross-Border Holdings and Transfers of Digital Assets and Tokens (DAT Joint Project)", Prel. Doc. No 3C of January 2023 for CGAP 2023, para. 17, available at www.hcch.net, Governance/Council on General Affairs and Policy/Archive (2000-2023). However, the HCCH-UNIDROIT *Digital Assets and Tokens Project*, was concluded as it was unlikely that a mandate for further work to be undertaken in the framework of the DAT Joint Project would find with consensus among HCCH Members, as Conclusions & Decisions, HCCH Council on General Affairs and Policy (CGAP), 5 to 8 March 2024, on the basis of Prel. Doc. No 3 of January 2024, par. 26, https://assets.hcch.net/docs/efce41ca-1c8c-4d61-9d8b-9348df9303a0.pdf.

[25] HCCH, Proposal for a Normative Project: Private International Law Issues Relating to Digital Tokens," Prel. Doc. No 5B REV of March 2024, available on the HCCH website www.hcch.net under "Governance" then "Council on General Affairs and Policy"; once the HCCH-UNIDROIT *Digital Assets and Tokens Project* was concluded, Conclusions & Decisions, HCCH Council on General Affairs and Policy (CGAP), 5 to 8 March 2024.

proprietary issues with respect to digital assets, concerns on the risk of regulatory arbitrage by issuers and intermediaries holding digital assets in detriment of investors is related to the scope of the regulatory frameworks applicable to those digital-asset-related activities.[26]

Against such a backdrop, the Paper is divided in three Parts including this introduction that sets the scene and spots the main soft-law international instruments providing for harmonised principles and best practices dealing with private-law issues related to proprietary rights, insolvency, and enforcement involving digital assets. Part II is focused on the notion of digital asset and the concept of control. Part III addresses enforcement-related aspects.

II. Defining digital assets on a global and harmonised basis and the pivotal role of control

The concept of "digital asset" is neither uniformly defined nor clearly delimited. It is indeed a broad category of undefined contours that comprises different sub-classes from cryptocurrencies, and stable coins, to tokens of various kinds and non-fungible tokens (NFTs). These sub-classes of digital assets have distinctive characteristics depending upon operational features, holding methods and commercial uses, and show differing degrees of analogy to existing asset classes. While certain assets resemble, and are treated as, financial instruments, others may be deemed contracts, license agreements or mere representations of other assets, value or rights. Each type has different variables that may intensify or diminished certain regulatory challenges and alter the legal analysis.

The digital component of this class of assets makes attempts to distinguish them from mere information, data sets, digital content, or a variety of digital realities with economic value (from social media accounts to transmissible files and electronic communications) rather challenging and ambitious. Demarcating the perimeters of the "digital assets" category is, however, particularly relevant and pressing in the facing of the expanding data economy.[27] As non-rival (and non-excludable or excludable) goods,[28] data can expand and replicate their value and utility for multiple purposes and unlimited uses and reuses without losing quality or dwindling quantity.

[26] The position paper submitted by France in relation to the now-concluded DAT Joint Project stressed two main oppositions to the party autonomy rule in Principle 5 – Prel. Doc. No 3 of January 2024, par. 17, https://assets.hcch.net/docs/efce41ca-1c8c-4d61-9d8b-9348df9303a0.pdf. On the one hand, a substantial objection against party autonomy in the field of property rights. On the other one, the connection between the choice of law by the parties and a risk of regulatory arbitrage by issuers and intermediaries vis-à-vis the invertors. This second concern, however, misses the distinction highlighted in the main text between the applicable law to proprietary issues and other private-law aspects, and the regulatory framework governing the activities and functions of issuers and intermediaries in the market.

[27] ALI-ELI *Principles for a Data Economy: Data Transactions and Data Rights*, https://principlesforadataeconomy.org/, traces an interesting distinction between data representing information, functional data, and representative data. The latter sub-category comprises 'digital assets.

> <E>Principle 2: Scope of the Principles
> <E>"The primary focus of the Principles is on records of large quantities of information as an asset, resource or tradeable commodity. The Principles do not address functional data, e.g. data the main purpose of which is to deliver particular functionalities (such as a computer program), and representative data, e.g. data the main purpose of which is to represent other assets or value (such as crypto-assets)."

[28] Data can be public goods (and non-excludable) or club goods (excludable). Nestor Duch Brown, Bertin Martens, and Frank Muller-Langer, *The economics of ownership, access and trade in digital data* – JRC Digital Economy Working Paper 2017-01, European Commission, 2017, JRC104756.

Unlike regulatory instruments that may need to develop a detailed typology of digital assets[29] for financial, monetary or payment purposes, a private-law harmonised approach to digital assets, with rules, in particular, related to proprietary rights and enforcement, invites the formulation of a more foundational definition of digital assets. That crystallise in the definition put forward by the DAPL Principles: *"Digital asset" means an electronic record which is capable of being subject to control* (Principle 2.2).[30]

Such a definition encapsulates, on the one hand, UNCITRAL work on electronic transferable records (MLETR) the notion of electronic record; and places the concept of "control"[31] at the heart of the private-law legal regime over digital assets. As a functional equivalent of possession, "control" is decisive for the creation and the exercise of proprietary rights over digital assets, for enforcement, or for tracing and recovery in insolvency proceedings. This definition of digital assets as electronic records capable of being subject to control is paving the path for the deployment of a globally harmonised set of private-law rules. It is jurisdiction-agnostic, is independent from regulatory considerations, and is solidly rooted in the uniform notions of electronic records and control as developed by the texts on electronic commerce and electronic transferable records.

The notion of "control" is the second key contribution to a global harmonised legal framework for digital assets. Rules for holding, transferring, and creating proprietary rights on digital assets, for enforcing rights, and for assets tracing and recovery in insolvency proceedings need to get rid of the tangibility-determinants embedded in the notion of possession, and finding an alternative. "Control" is the solution. Control is defined as a factual notion, based on and defined by "factual abilities." In charting the use of this control standard for creating and transferring rights and interests in certain assets, a brief comparison is to be made between the MLETR and the DAPL Principles so as to show how the notion evolves. Article 11 MLETR traces the functional-equivalence link with possession by setting out two requirements to meet "where the law requires or permits the possession of a transferable document or instrument" with respect to an electronic transferable: a reliable method to establish exclusive control of that electronic transferable record by a person; and a reliable method to identify that person as the person in control. DAPL Principles provides for a more elaborate framework for digital assets that rightly differ from the MLETR standard in those specific points where the characteristics of the underlying assets (digital assets) call for. In Principle 6, three factual abilities of a person – who is allowed to identify itself as having such abilities - having "control" of the digital asset are required: the exclusive ability to prevent others from obtaining substantially all of the benefits from the digital asset; the ability to obtain all

[29] Such as cryptocurrencies, asset-referenced tokens, electronic money tokens, stable coins, utility tokens, digital assets qualified as financial instruments.

[30] The "controllability" – "capability of being subject to control" – is also a definitory and scoping element in the UCC § 12-102(a)(1) "Uniform Commercial Code-Controllable Electronic Records". C.R.S. § 4-12-101. Added by 2023 Ch. 136,§ 89, eff. 8/7/2023.2023 Ch. 136, passed without a safety clause. Upon the Amendments, Article 12 UCC defines "Controllable electronic record" as "a record stored in an electronic medium that can be subjected to control under section 4-12-105. The term does not include a controllable account, a controllable payment intangible, a deposit account, an electronic copy of a record evidencing chattel paper, an electronic document of title, investment property, a transferable record, or an electronic record that is currently authorised or adopted by a domestic or foreign government and is not a medium of exchange that was recorded and transferable in a system that existed and operated for the medium of exchange before the medium of exchange was authorised or adopted by a government." As per the *TriBar Report on Opinions Under 2022 Amendments to the Uniform Commercial Code Regarding Emerging Technologies*, *The Business Lawyer*, Spring 2024, Volume 79, Issue 2, "(t)he 2022 amendments (the "Amendments") to the Uniform Commercial Code (UCC) add a new Article 12 to the UCC and amend most of the other Articles of the UCC, in particular Article 9, to provide new and specific rules for sales of and security interests in certain types of digital assets."

[31] See and compare Art. 11 MLETR; and Principle 6 DAPL Principles as for the extent of the "exclusive ability" requirement.

such benefits; and the exclusive ability to transfer these abilities to another person. The element of exclusivity is relaxed in the DAPL Principles (Principle 6.3) and acknowledge situations where the digital asset, or the relevant protocol or system, limits the use of, or is programmed to make changes to, the digital asset, including change or loss of control, or the person in control has agreed, consented to, or acquiesced in sharing that ability with one or more other persons, such as in multiple-signature arrangement.

The third cornerstone of these emerging sets of principles is the policy decision for pragmatic non-discrimination approach to face the extremely complex matter of the "property status" of digital assets. The legal characterisation (as "property," "goods," or "other concepts" in the different legal traditions),[32] in particular, the "property status" of digital assets is highly debatable. There is no global consensus. Domestic laws have responded to the proliferation of digital assets in various different ways. Uncertainties in the legal characterisation and their status as "property" impact on the legal regimen for proprietary rights, enforcement or insolvency.

The pragmatic solution contributed by the soft-law instruments is embodied in the propositions: 'a digital asset can be the subject of proprietary rights' (Principle 3 (1) DAPL Principles); digital assets are susceptible to enforcement (BPEE project, ELI on *Access to Digital Assets*); and a proprietary right in a digital asset that has become effective against third parties is effective against the insolvency representative, creditors, and any other third party in an insolvency-related proceeding (Principle 19 DAPL Principles).

These fundamental propositions, sometimes explicitly formulated, other assumed as underlying assumptions or given premises in these soft-law instruments, are instrumental to unleash the international harmonisation process. The pragmatism is key. Its formulation seems to be inspired, but drafted in an affirmative way, by the "non-discrimination principle" (recognising that a certain legal effect is not "denied on the sole ground that" the asset is a digital asset), widely recognised in international legal harmonisation instruments on the use of electronic communications in international contracts. The UNCITRAL Model Laws on Electronic Commerce (1996), on Electronic Signatures (2001), and on Electronic Transferable Records (2017) are all based on the principles of non-discrimination, technological neutrality and functional equivalence to a varying extent; as well as the United Nations Convention on the Use of Electronic Communications in International Contracts (2005).[33]

The merits of such a pragmatic, but nonetheless decisive, courageous, and substantially prescriptive solution, is that it eludes the amply differing domestic approaches to property and avoid pronouncing on the elusive and dogmatically complex conundrum. But, nevertheless, by affirming that digital assets can be the subject of proprietary rights, susceptible of enforcement, or relevant in insolvency proceedings, the hampering obstacle of the immobilism due to legal uncertainty is overcome. This is a contribution of paramount importance.

DAPL Principles contains other very relevant provisions regarding "linked assets" (Principle 4), applicable law (Principle 5), transfer (Principles 7–9), custody (Principles 10–13), security rights (Principles 14–17), general enforcement (Principle 18) and digital assets in insolvency (Principle 19). In these matters, international soft-law instruments are enabling the decantation of emerging international legal standards that legislators can use as a guidance to modernise, update, and reform their legal system to

[32] As an illustration, Law Commission *Digital Assets: Final Report*, Law Com No 412, https://lawcom.gov.uk/document/digital-assets-final-report/; and the short consultation exercise launched subsequently on the draft legislation proposing a "third" category of personal property, in accordance with one of the recommendations in the final report https://lawcom.gov.uk/project/digital-assets/.

[33] United Nations Convention on the Use of Electronic Communications in International Contracts (New York, 2005) (adopted 23 November 2005, entered into force 1 March 2013).

accommodate digital assets. A strong case for harmonisation of the rules on digital assets is to be made. The contribution of soft-law instruments to this process is highly laudable and appreciated.

III. The harmonising potential of best practices: digital assets enforcement

As mentioned in the introduction, the use of digital assets in the market and litigation involving digital assets are on the rise. Creditors want to be reassured that they can effectively enforce their rights, even if these are related to such assets. In addition to the general circumstances that can traditionally render the enforcement of creditors' rights costly, ineffective, or unsuccessful, specific complexities linked to the functional, structural and operational characteristics of digital assets can add costs, uncertainties or inefficiencies to the enforcement proceedings. Therefore, special attention is being paid to ensure the effectiveness of the enforcement of rights on digital assets within the framework of the UNIDROIT *Project on Best Practices for Effective Enforcement (BPEE)*.

While the key policy premise is that digital assets are susceptible to enforcement and, therefore, that general enforcement rules should apply, the BPEE Working Group has acknowledged that some of the methods and procedures for enforcement show inadequacies, limitations, or have simply proven to be unsuited to the specificities of digital assets. Hence, it may be advisable to adapt the general rules, measures or procedures. In principle, *ad hoc* legal solutions for digital assets may be necessary only in rare cases, and therefore, most of the recommendations that are being developed for the future instrument are mainly of a practical nature, aimed to help authorities, practitioners, courts, and enforcement agents in the application of existing rules and enforcement methods to digital assets. Five general issues that have been discussed by the BPEE Working Group will be highlighted in the following paragraphs, which will mention the solution retained in the draft instrument where relevant, with the caveat that the instrument is still work in progress and that more detailed recommendations are in the process of being developed.

1. Distinctive features of digital assets with relevance for enforcement

Although the amply accepted finding is that solutions for digital assets enforcement can be found in general enforcement law, the novelty, the popularity, and the technological complexity underlying the operation of digital assets, as well as the limited familiarity with these classes of assets in certain circles, moved the Working Group to consider drafting or at least collating specific recommendations for digital assets with special consideration of their distinctive features. A separate set of recommendations was considered to provide more effective advice when considering the practical difficulties encountered in enforcement proceedings involving digital assets.

Should the premise be that general rules apply to digital assets, but their distinctive features require adaptation, a proper understanding of such singular characteristics and their implications for enforcement is a prerequisite. The different methods of holding digital assets, their natural cross-border nature, the elusive notion of location, the risk of dissipation of value, and the problem of identification, not only of the assets but also of the debtor itself, are the most revealing features that underscore the need for adaptation in the enforcement stage.

2. The uncertainties regarding the status of property rights on digital assets and the significance for enforcement

The concept of a digital asset is neither uniformly defined nor clearly delimited. It is indeed a broad category of undefined contours that comprises different sub-classes,

ranging from cryptocurrencies, to stablecoins, and non-fungible tokens (NFTs). Each type has different variables that may intensify or diminish certain legal challenges and alter the legal analysis. The heterogeneity of these asset classes complicates the legal debate on the legal characterisation of digital assets even more. The legal nature and the status of property rights on digital assets remain debated at domestic law level and are still unresolved on a harmonised basis. Nevertheless, the express recognition of the fact that a digital asset can be the subject of proprietary rights in the *UNIDROIT DAPL Principles*[34], however differently they may be characterised in domestic laws, is certainly a step in the right direction in terms of admitting third-party opposability of such rights over a digital asset.

The property status may have an impact on enforcement, as selected case law demonstrates. In *Kleiman v Wright*,[35] a Florida court discussed whether bitcoins were "money"[36] and thus capable or incapable of being the subject of an action of conversion under Florida law. Contrary to this ruling that admitted the action, an English court refused the applicability of conversion in *OBG v Allan* [2007] UKHL 21, on the grounds that in English law conversion has traditionally required physical possession of the object at stake. Likewise, the granting by a court of a proprietary injunction,[37] an asset preservation order,[38] or a proprietary freezing order[39] in respect of digital assets depends upon the response to the question of the legal characterisation.

As the examples selected above illustrate, the uncertain and unresolved legal characterisation of digital assets has a decisive impact on enforcement.

The draft BPEE do not directly solve this matter by determining a specific legal characterisation, but by conclusively affirming that digital assets are capable of enforcement and providing recommendations aimed to facilitate the adaptation of methods and procedures to the distinctive features of digital assets. The approach to this matter is therefore a pragmatic one.

3. The identification problem

The identification of the parties holding the digital asset relevant for the enforcement proceeding may be difficult, due to the anonymity or the use of pseudonyms as a distinctive feature of digital assets operating on DLT (*Distributed Legal Technologies*) models, or may require the cooperation of third parties. As the court acknowledged in the *Tulip Trading Ltd v Bitcoin Association for Bitcoin SV (BSV) and others* judgment,[40] '(t)he amounts held at every address are public, but the identity of the parties is not. The blockchain does not reveal the relationship between the digital addresses and any persons.' The draft BPEE

[34] Cf. Principle 3 (1).

[35] [2018] WL 6812914.

[36] The legal categorisation of digital assets is also relevant for the purposes of financial regulation. Disparate solutions have led to inharmonious regulatory approaches: taking the US as an example, some court decisions held that bitcoin is "money" (eg, *United States v Harmon* (US District Court, District of Columbia, 474 F.Supp.3d 76 (2020), *United States v Faiella* (US District Court, Southern District of New York, 39 F.Supp.3d 544 (2014), *SEC v Shavers* (US District Court, Eastern District of Texas, [2013] WL 4028182), while other decisions refused this categorisation – *United States v. Petix* (US District Court, Western District of New York, 15-CR-227A (W.D.N.Y. Dec. 1, 2016)), *State v. Espinoza* (US District Court, 11th Circuit Florida, F14-2923 (22 July 2016)).

[37] In the Japanese case *Mt. Gox*, for example, the court ruled that the lack of corporeality of bitcoins and the fact that they cannot be controlled in an exclusive manner by a person entailed that no proprietary remedy could be granted to the claimant: *Tokyo District Court, MtGox Co. Ltd. Case*, ref. number: 25541521. Final judgment: 5 August 2015.

[38] Granting the order, *Shair.Com Global Digital Services Ltd v Arnold* (Unreported 15 July 2019)

[39] In the affirmative, *Vorotyntseva v Money-4 Ltd* [2018] EWHC 2596 (Ch).

[40] [2022] EWHC 667 (Ch).

consider this issue by alerting legislators of the need to consider this factor particularly in determining the rules on disclosure in judicial enforcement on digital assets.

4. The international nature and the notion of location

The operation of digital assets primarily on DLT models and the habitual multi-jurisdictional nature of transactions and conflicts involving digital assets considering the parties involved – debtor, creditor, custodians, other intermediaries – add complexities to enforcement proceeding. While location is a usual connecting factor to determine applicable law or *forum*, it can also be relevant at the enforcement stage in ensuring the effectiveness of an enforcement order or in determining the territorial jurisdiction of enforcement agents.[41]

Efforts to link the "location" of digital assets with the residence, domicile or place of business of the holder or the intermediary come up against the diversity of holding models and their implications. Digital assets can either be directly held by a wallet native to the protocol, held in an internet-based wallet offered by a third-party provider, or held by relying on a custodial wallet provider.

The significance of the variety of holding models for enforcement is twofold. On the one hand, it shows how a typical connection factor, ie, location, becomes elusive, uncertain, or even totally irrelevant as regards digital assets. Users can hold crypto assets in their own wallets (on a specific device), in internet-based wallets ("hot wallets"), or in wallets offered by third parties (established in a certain country). It is then uncertain whether user's domicile, custodian's establishment, technological devices' location, or other factors might be relevant for enforcement purposes. On the other hand, the diversity of holding models leads to different scenarios in enforcement, where it is necessary to identify the person who has to cooperate for the purposes of enabling the enforcement actions. The draft BPEE emphasise the essential role of cooperation of the debtor and/or third parties during the successive stages of enforcement and for the purposes of disclosure of information, seizure or transfer.

5. The relevance of the cooperation of the debtor and/or third parties for enforcement

The diversity of holding models reveals that cooperation may be required from the debtor, in some cases, or from third parties that provide various services of custody, trading or intermediation, in other cases. Should the debtor or the third parties not cooperate on a voluntary basis, adequate measures need to be granted. Although *in personam* measures are, in principle, deemed as a last resort, they prove to be particularly adequate in the enforcement of digital assets.[42] These measures should be proportionate and adequate, and priority should be given to less invasive and less costly measures, taking into account the circumstances and the interests and rights at stake. Special consideration needs to be paid

[41] International Union of Judicial Officers (UIHJ), *Global Code of Digital Enforcement*, September 2021.

<E>Article 12 - Territorial jurisdiction of judicial officers or enforcement agents

<E>*The competence of judicial officers or enforcement agents to identify digital assets and the place where they are accessible should be governed by the debtor's domicile.*

<E>*The competence of judicial officers or enforcement agents to seize and sell a digital asset should be governed by the place where it is identified and accessible.*

[42] In the *Tsarkov* case, for example, the Court ordered the defendant to provide the password to his crypto-wallet to the insolvency administrator – First instance – *Moscow Arbitrazh Court; Appellate court – Ninth Arbitrazh Appellate Court, civil matters - Mr Tsarkov case*, case No. A40-124668/17. Resolution of the Appellate court: 15 May 2018.

to the protection of third-party rights, the risk of exposure of trade secrets and confidential information, cybersecurity risks, and privacy issues.

The cooperation of the debtor in asset disclosure renders enforcement much easier and more practical. In some cases, however, the technological complexity of digital assets may require the assistance of technical experts to ensure full compliance with disclosure obligations. Besides, enforcement organs can search for information in publicly-accessible registers – such as movables/security rights registries, or companies registers, provided that applicable law requires such registration – insofar as this is necessary. The increase of disclosure obligations provided for by financial regulation, tax legislation or other regulatory instruments facilitates the access to relevant information provided by third parties and reinforces the need of cooperation of private entities and public authorities with competent enforcement organs in respect of digital assets. The duty of disclosure by third parties is related but it is not limited to the identification of users and digital assets. Disclosure can refer to any information relevant for the enforcement proceedings.

Cooperation becomes particularly critical to effectively and efficiently seize and transfer the digital assets. Based on the concept of "control" of the *UNIDROIT DAPL Principles* (Principle 6), the BPEE articulates the seizure and the transfer of digital assets for enforcement purposes. To that end, depending on the holding model, the debtor's cooperation can be crucial and irreplaceable – ie, in the case of "cold wallets" – to provide access and taking of control, or third parties' cooperation can be necessary (eg, when the debtor is unwilling or unable to cooperate, for instance because it cannot provide the required information or perform the required actions to transfer control; or on the basis of the service provision agreement, or of any technological consideration, the cooperation of the debtor is insufficient or ineffective, because the third party retains control over the private key or a multi-signature arrangement is in force). It should be noted that resistance to cooperate or unsuccessful cooperation, despite the provision by the applicable law of dissuasive (effective, proportionate and adequate) sanctions, may still lead to ineffective or even totally unsuccessful enforcement.[43]

6. The realisation of value

The special characteristics of digital assets may add two different elements of complexity in the realisation of value: lack of liquid markets, or high volatility. Certain digital assets may lack a liquid market, rendering the valuation of the assets and the conversion into money challenging. Other digital assets, such as cryptocurrencies, do have a liquid market but are highly volatile. Therefore, the value may vary drastically from the moment of taking control of the digital assets by the enforcement agent and the actual realisation of the value for the creditors. Volatility and uncertainties on the reference value for realisation will affect the effectiveness of enforcement actions. Therefore, the draft BPEE recommend that clear, predictable, and adequate criteria and procedures for valuating digital assets in due consideration of these particular characteristics should be considered. Existing criteria, procedures, and enforcement rules available for assessing the value of assets other than digital assets but with similar characteristics may be used as useful benchmarks to the extent possible.

[43] Eg, the Australian case Blockchain Global – *Chen v Blockchain Global Ltd; Abel v Blockchain Global Ltd* –¯ where a Security "2 of 2" wallet has been employed, which means that 2 out of 2 signatories need to authorise a transaction to make a transfer out of it, if any of seed phrase is lost, forgotten or corrupted, the Bitcoins will become inaccessible, which would amount to the destruction of bitcoins. In fact, in *Tulip Trading Ltd v Bitcoin Association for BSV [2022] EWHC 2 (Ch),* the private keys have been lost in a hack, likely stolen, and consequently, without its private keys Tulip could not access its assets or move them to safety.

Insolvency proceedings, in particular, provide revealing insights on this matter. As the Japanese case *Mt. Gox*[44] proves, valuation methods for digital assets can be diverse and lead to significantly disparate consequences in terms of value. Two methods of bitcoin valuation were applied depending upon the type of proceedings.[45] In insolvency proceedings, non-monetary claims, including bitcoin claims, were converted into monetary claims based on the valuation as at the time of the commencement of insolvency proceedings; while in civil rehabilitation proceedings, non-monetary claims, including bitcoin claims, are not required to be converted. Given the volatility of bitcoins, the relevant date for conversion becomes critical. The Court held in *Mt. Gox* that the relevant date was that of the start of the civil rehabilitation proceedings, while an Italian court decided in the two proceedings of the *BitGrail case*[46] that the date of the declaration of bankruptcy should be referenced.

IV. Conclusions

This Paper explores the emergence of principles and best practices on proprietary rights, insolvency and enforcement as a crucial process of international legal harmonisation of rules for digital assets, stressing the common approaches and noting disparities and gaps to be filled.

The DAPL Principles and the BPEE project address the need for more clarity and predictability of the legal regime applicable to the enforcement of rights in digital assets outside insolvency and, as regards the DAPL Principles, also within insolvency. They do so by offering soft-law guidance to legislators and other stakeholders, which can then be adapted to the specificities of each legal system while preserving the objectives and the harmonised legal framework introduced with the uniform law instrument. While the DAPL Principles have just been adopted and the BPEE project is still awaiting completion, they appear to be well suited to serve their respective aims, and, in relation to the specific topic of enforcement of rights in digital assets, to contribute to increasing certainty and effectiveness of the legal framework within domestic laws and across borders. Once formally adopted such global instruments face the challenge of being (correctly) implemented and accepted by their intended addressees.

As these and other ongoing projects start to culminate and begin their implementation stage, special attention should be paid to ensuring substantive coherence and consistency and efforts should be made to promote uniformity, and facilitate the achievement of the global harmonisation goals as well in the implementation phases.

[44] Tokyo District Court of 2015, MtGox Co. Ltd. Case, ref. number: 25541521. Final judgment: 5 August 2015.

[45] Answers to Frequently Asked Questions, Announcement of Commencement of Civil Rehabilitation Proceedings, 22 June 2018, available at https://www.mtgox.com/img/pdf/20180622_announcement_en.pdf.

[46] Court of Florence - Mr Francesco Firano's case No. 17/2019, bankruptcy docket No. 178/2018 and 205/2018; BitGrail case No. 18/2019, bankruptcy docket No. 179/2018 and 505/2018. Mr Francesco Firano's Decision No 17/2019, 21 January 2019; BitGrail Decision No. 18/2019, 21 January 2019.

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