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**Digital Assets and Private Law
Working Group**

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ISSUES PAPER

1. This document provides a preliminary discussion of issues that the Digital Assets and Private Law Working Group may wish to consider in preparing the prospective guidance document.
2. The issues considered in this document were identified by:
 - (i) Working Group experts during a series of Exploratory Working Group sessions held between July and September 2020
 - (ii) The participants in an Exploratory Workshop on Digital Assets and Private Law held on 17 – 18 September 2020
 - (iii) Feedback received from Members of the UNIDROIT Governing Council at its 99th session (23 – 25 September 2020)
 - (iv) The Chair of the Working Group, or
 - (v) The Secretariat

The document is not intended to provide an exhaustive list of issues nor a full legal analysis of each issue. The purpose of the document is to provide a starting point for the Working Group's deliberations and a structure for discussions at the first meeting.

3. The document is divided into two sections: (i) preliminary matters and (ii) scope of the prospective guidance document. In some sections, the document raises a number of questions that the Working Group may wish to consider. The document also contains an annex that provides links to relevant documents to assist the Working Group.

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I. PRELIMINARY MATTERS

A. Background

4. In 2015, the Secretariat received a proposal from the Ministry of Justice of Hungary to consider the development of model laws in the domain of “business informatics”.¹ In November 2016, the Ministry of Industry and Trade of the Czech Republic sent the UNIDROIT Secretariat a proposal to include two main topics in the Work Programme: distributed ledger (or blockchain) technology and inheritance of digital properties (see [UNIDROIT 2017 – C.D. \(96\) 5, Appendix II](#)). The Czech Republic submitted a second proposal to UNIDROIT’s Governing Council at its 97th session (Rome, 2-4 May 2018), during which the Council concluded that the Secretariat should continue to monitor developments in this area with a view to its possible inclusion in the future Work Programme (see [UNIDROIT 2018 – C.D. \(97\) 19](#), para. 245).

5. Similarly, the Czech Republic presented a proposal to the UNCITRAL Secretariat requesting that UNCITRAL closely monitor developments relating to legal aspects of smart contracts and artificial intelligence. At its 51st session (New York, 25 June-13 July 2018), the Commission decided that “[t]he Secretariat should compile information on legal issues related to the digital economy, including by organizing, within existing resources and *in cooperation with other organizations*, symposiums, colloquiums and other expert meetings, and to report that information for its consideration at a future session.”²

6. In line with the joint proposal of the Czech Republic and having received a similar mandate from their governing bodies, UNIDROIT and UNCITRAL agreed to explore the possibility of future joint work in this area. Both organisations agreed that it would be necessary first to identify the most adequate areas of possible work and later to narrow down the scope of the work as well as to define its nature. In light of this, it was decided that two workshops would be held, convening international experts on the different subject matters encompassed by the initial proposal of the Czech Republic.

7. A first joint, invitation-only, workshop was convened at UNIDROIT’s seat (Rome, 6-7 May 2019). The workshop gathered leading experts, particularly in the fields of distributed ledger technology (DLT), smart contracts and areas of artificial intelligence.³ The Governing Council, at its 98th session (Rome, 8-10 May 2019), was informed that the joint workshop had revealed great interest in the area, with particular reference to a general project on digital assets. It was further noted that this project “would require work on categories and conceptualisations, in order to develop a set of definitions for terminologies and concepts used within this area”, which in turn “would entail establishing a taxonomy of terms used as part of the digital economy” (see [UNIDROIT 2019 – C.D. \(98\) 17](#), para. 267).

8. The Governing Council asked the Secretariat to “conduct further research to narrow down the scope of the project”, which, based on the conclusions of the joint workshop, “would be initially confined to digital assets”, with a decision on final scope to be taken by the Council at its 99th session. The Council also recommended that the Secretariat “conduct additional research on the impact of Smart Contracts/DLT/AI on existing UNIDROIT instruments” (see [UNIDROIT 2019 – C.D. \(98\) 17](#), para. 275).

9. The Governing Council recommended to the General Assembly that it include this item at medium priority on the 2020-2022 Work Programme ([C.D. \(98\) 17](#), para. 275). The General

¹ [UNIDROIT 2016 – C.D. \(95\) 13 rev., Annex II](#).

² See Report of the United Nations Commission on International Trade Law, UNGA Doc. A/73/17 (51st session, 25 June – 13 July 2018), para. 253, available at: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/V18/052/21/PDF/V1805221.pdf?OpenElement> (emphasis added).

³ For further information, the Summary of the Discussion and Conclusions from that workshop can be found here: <https://www.unidroit.org/english/news/2019/190506-unidroit-uncitral-workshop/conclusions-e.pdf>.

Assembly, at its 78th session, approved the inclusion of the project in the Work Programme of the organisation for the 2020-2022 triennium as recommended by the Governing Council ([A.G. \(78\) 12](#), paras. 43 and 51, and [A.G. \(78\) 3](#) paras. 69-71). The General Assembly asked the Secretariat to more precisely determine the scope of the project and present it for reconsideration at the next session of the Governing Council.

10. To carry out the mandate received from the General Assembly, a second joint UNIDROIT and UNCITRAL workshop was convened at the UNCITRAL Secretariat in Vienna on 10-11 March 2020. As the previous meeting, this event was an invitation-only meeting of experts, many of whom had also taken part in the first workshop. The invitation was extended with the aim of developing “a legal taxonomy of key emerging technologies and their applications”. This second event focused exclusively on the drafting of a taxonomy as well as on the potential relevance of new technologies to existing instruments.

11. On the basis of the discussions during the first and second workshops (Rome, 6-7 May 2019, and Vienna, 10-11 March 2020, respectively) a document was submitted to the Governing Council at its 99th session (A) ([C.D. \(99\) A.4](#), paras. 23-33) which set out the Secretariat’s proposal on the most appropriate scope for this project, considering that further refinements should be entrusted to the experts who will be selected as members of the Working Group for the project.

12. In broad contours, the proposal described a project that would aim to do the following:

- “The project would develop Principles relating to the legal nature, transfer and use of tokens. It would focus on private law, and not regulation. It would consist of a legal taxonomy, and consideration of issues arising in various important contexts, such as insolvency, secured transactions, identification of the applicable law in cross-border transactions, and the legal position of intermediaries involved in the token markets, such as exchanges and custodians.
- It would take a functional approach, neutral as to legal culture. It would therefore seek to identify the rights and obligations arising, without giving bundles of rights and obligations labels, such as ‘property’, which vary amongst jurisdictions.
- It would be necessary to consider how far the Principles developed by the project are consistent with existing law. Despite the fact that tokens are a ‘new’ type of asset, consistency with legal treatment of other types of asset could be seen as important, and consideration will need to be given to what extent existing legal Principles can apply by analogy, and what modifications are required.
- The project would also take a neutral approach, as far as possible, in relation to technology, so as to ‘future proof’ the Principles. In other words, it would seek to develop Principles that could apply to any system in which data could constitute a token (that is, an asset which could only be spent once), rather than being specifically applicable to systems based on DLT or blockchain. In this way, the danger that the work would be overtaken by technological or market developments would be minimised”.

13. On the basis of feedback received from the Governing Council at its 99th session (A) the Secretariat prepared an amended proposed action, namely:

- “to begin work on the project (i) remotely, in order to avoid costs, and (ii) limited to further refining the scope of the project.
- In order to conduct this limited work until the second meeting of this session of the Governing Council in September, the Secretariat requested authorisation to select a limited group of experts, which would naturally evolve into the core of the future Working Group. This core group would assist the Secretariat in the preparation of a more developed

document for the September meeting. In addition to incorporating comments and analysing topics arisen as a consequence of this discussion, said document would include (i) details of the full Working Group, (ii) a detailed time-line of a proposed action plan, and (iii) an explanation as to how this project would feed into – and hence create synergies – with other projects of the current Work Programme.”

- To change the name of the project to one that better represented the content of the work.

14. The Governing Council agreed to approve the scope and upgrade the level of priority, as well as to follow the amended proposed action by the Secretariat ([C.D. \(99\) A.8](#), paras. 57-58).

15. Carrying out the mandate received from the Governing Council, the Secretariat set up an Exploratory Working Group, chaired by Professor Hideki Kanda, which held five meetings between July and September 2020 and prepared a preliminary draft of this Issues Paper.

16. Additionally, the Exploratory Working Group facilitated the organisation of an Exploratory Workshop on Digital Assets and Private Law which was held on 17 and 18 September 2020 in a hybrid manner.

17. The Secretariat presented the result of the deliberations of the Exploratory Working Group and the outcomes of the Exploratory Workshop at the September session of the 99th UNIDROIT Governing Council (C.D. (99) B.4 rev.). Following deliberations, it was confirmed to proceed with this project at high priority, allowing the Secretariat to establish a Working Group ([C.D. \(99\) B Misc. 2, paras. 7 and 8](#)). The Governing Council approved the temporary change of name of the project to “Digital Assets and Private Law” and provided inputs regarding the structure and composition of the future Working Group, which would also be assisted by a Steering Committee with a broad membership, with experts from different fields (both technical and legal), ensuring an appropriate diversity in terms of geography, legal systems, and gender.

B. Format of the Guidance Document

18. It is anticipated that the Working Group will prepare a set of Principles with commentary (not – at this stage – a model law or convention) which would include a legal taxonomy relating to digital assets, plus consideration of legal issues arising in particular contexts. A functional approach to legal concepts was deemed to be most appropriate in order to produce a set of Principles which would not be jurisdiction specific, but which could be applied and reflected in any given legal system or culture. The Principles would embody best practice and international standards and would enable jurisdictions to take a common approach to legal issues arising out of the holding, transfer and use of digital assets across a variety of use cases.

19. For possible templates, the Working Group may wish to consider other existing UNIDROIT instruments such as the [UNIDROIT Principles on the Operation of Close-Out Netting Provisions](#) and the [UNIDROIT Legislative Guide on Intermediated Securities](#).

C. Target Audience

20. As consistent with all UNIDROIT instruments, the prospective guidance document should be relevant for both common law and civil law States and would aim to reduce legal uncertainty which practitioners, judges, legislators and market participants would face in the coming years in dealing with digital assets.

D. Title of the instrument

21. As mentioned above, it is anticipated that the instrument will be in the form of a set of Principles and legislative guidance in the area of digital assets and private law. Once the project has advanced sufficiently, the Governing Council's endorsement will be sought for a revised title.

E. Terminology

Use of Standard Definitions

22. One of the objectives of the project is to come up with a legal taxonomy relating to digital assets which is to be developed in coordination with UNCITRAL. Accordingly, it is important that care be taken to ensure accuracy as well as uniformity and consistency across the terms used by both organisations.

Consistency of terminology with existing instruments

23. Existing instruments use different terminology for related concepts. The Working Group will need to consider which terminology the guidance document should use. Particular attention will be paid to the terminology used in key instruments of reference such as the UNCITRAL Model Law on Electronic Records (e.g., "electronic transferable record" and "control") as well as the UNIDROIT Convention on Substantive Rules for Intermediated Securities (2013) and the UNIDROIT Legislative Guide on Intermediated Securities (2017).

F. Composition of the Working Group

24. Consistent with UNIDROIT's established working methods, the Working Group is composed of experts selected for their expertise in the fields of property law, secured transactions, and digital technology and the law. Experts participate in a personal capacity and represent the world's different systems and geographic regions.

25. The Digital Assets and Private Law Working Group is composed of:

- Hideki Kanda, (Chair), Professor, Gakushuin University (Japan)
- Jason Grant Allen, Senior Research Fellow, Humboldt University of Berlin (Australia)
- Reghard Brits, Professor, University of Pretoria (South Africa)
- Marek Dubovec, Executive Director, Kozolchuk National Law Center (NatLaw) (United States)
- David Fox, Professor, University of Edinburgh (United Kingdom)
- Louise Gullifer, Professor, University of Cambridge (United Kingdom)
- Matthias Haentjens, Professor of Private Law at Leiden University (Netherlands)
- Charles Mooney, Professor, University of Pennsylvania (United States)
- Philipp Paech, Associate Professor at LSE (Germany)
- Carla Reyes, Assistant Professor, Southern Methodist University (United States)
- Nina-Luisa Siedler, Partner at DWF (Germany)
- Luc Thévenoz, Professor, Université de Genève (Switzerland)
- Jeffrey Wool, Senior Research Fellow, Harris Manchester College, University of Oxford (United States)
- Mimi Zou, Fellow, Oxford University (China)

26. UNIDROIT also invited a number of organisations with expertise in the field of digital assets and private law to participate as observers in the Working Group. Participation of these different organisations will ensure that different regional perspectives are considered in the development and adoption of the instrument. It is also anticipated that the cooperating organisations will assist in the

regional promotion, dissemination and implementation of the guidance document once it has been adopted. The following organisations have been invited to participate as observers in the Working Group:

- The World Bank Group
- The United Nations Commission for International Trade Law (UNCITRAL)
- The Hague Conference on Private International Law (HCCH)
- The European Central Bank (ECB)
- The European Banking Authority (EBA)
- The American Law Institute (ALI)

27. Finally, UNIDROIT may also invite a number of industry associations to participate as observers in the Working Group to ensure that the guidance document will address the private sector's needs. The latter will also assist in promoting the implementation and use of the guidance document. The following private sector association has been invited to participate as an observer in the Working Group, but more may be invited:

- The International Swaps and Derivatives Association (ISDA)

G. Methodology and Organisation

28. Under the guidance of the Working Group Chair Professor Hideki Kanda, the Working Group will undertake its work in an open, inclusive, and collaborative manner. As consistent with UNIDROIT practice, the Working Group will not adopt any formal rules of procedure and seek to make decisions through consensus.

29. The preparation of a guidance document on Digital Assets and Private Law is a high priority project on the UNIDROIT Work Programme (2020-2022). The following would be a tentative calendar, the effective execution of which may be affected by the evolution of the current extraordinary international context:

- (a) Drafting of the guidance document over four sessions of the Working Group in 2020-2021:
 - First session: 17-18-19 November 2020 (remote)
 - Second session: First quarter of 2021
 - Third session: Before the summer of 2021
 - Fourth session: Second half of 2021
 - It is envisaged that, in between in-person sessions, remote meetings may be conducted when deemed necessary. Given the extraordinary circumstances, one or more of the in-person meetings may be substituted by remote webinars.
- (b) Consultations and finalisation: 2022
- (c) Adoption by the Governing Council of the complete draft at its 101st session in May 2022.

II. SCOPE OF THE GUIDANCE DOCUMENT

A. Relationship with existing instruments and other projects of the current Work Programme

30. This section briefly introduces how this project would benefit from existing instruments and feed into – and hence create synergies – with other projects of the current Work Programme.

31. In terms of the relationship with existing UNIDROIT instruments, important aspects envisaged in the Digital Assets and Private Law project concern the legal analysis of transfers and the taking of security over digital assets, issues relating to the provision of digital asset custody services, and issues relating to the insolvency of the custodian of digital assets. These items naturally link with the Institute's work in capital markets and, more precisely, in the area of intermediated securities, providing connections with existing instruments such as the UNIDROIT Convention on Substantive Rules for Intermediated Securities (2013) and the UNIDROIT Legislative Guide on Intermediated Securities (2017).

32. Regarding synergies with other projects of the current Work Programme, there is a natural fit with the Best Practices of Effective Enforcement project, which will undertake the analysis of the impact of new technologies on enforcement as one of its main objectives. This constitutes a natural opportunity for cross-fertilisation between the two projects, and, to this end, a number of experts involved in the Exploratory Working Group on the Digital Assets project have already been contacted to help identify concrete examples of the application of new technologies in the context of enforcement. Additionally, a workshop organised on 21 September 2020 on Enforcement featured a panel on the impact of new technologies on enforcement with presentations delivered on a taxonomy of technological applications in enforcement proceedings, smart contracts and enforcement, and enforcement and digital assets.

33. Another area which presents an opportunity for cross-cutting work is the joint UNIDROIT – UNCITRAL project concerning a Model Law on Warehouse Receipts. There is a direct relationship with this project which examines the issuance and transfer of electronic warehouse receipts for goods stored in warehouses. In this connection, one of the categories of digital assets to be examined in the Digital Assets project concerns digital tokens which are linked to an external non-digital asset. By fostering exchanges between the two Working Groups, the legal analysis undertaken in the context of both projects would be mutually enriched. Moreover, should the work in the project to draft a Model Law on Factoring cover receivables issued in the form of digital assets, the cross-fertilisation between both projects would also bring about important benefits.

34. Additionally, this project also has synergies with a project on [Best Practices in the Field of Electronic Registry Design and Operation](#) which is run by the [Cape Town Convention Academic project](#), in partnership with the UNIDROIT Foundation, Aviareto, and the Aviation Working Group. This project is developing a best practice guide for electronic registries, focused on collateral registries, which may be an important element of a system of digital assets, particularly when used as collateral.

B. General: Private law relating to Digital Assets, in particular proprietary interests

35. The Working Group is invited to focus on private law issues relating to digital assets and in particular proprietary interests with a view to assessing the extent to which rules provided under typical common law and civil law systems are appropriate—or not—for digital assets. It is envisaged that the project will offer solutions not only where gaps exist, but where the traditional approaches would not be appropriate and should be modified. Where necessary, the discussion will seek to (i) explain various technological aspects, (ii) identify the issues that may arise in the absence of specific laws and regulations, and (iii) suggest Principles that the private law regime should incorporate.

36. While regulation *per se* is outside the scope of this project, given that there a number of aspects touched upon by the project which border on regulatory issues, the Working Group may wish to take these into account to ensure coherence between the recommendations for private law and any regulatory approaches. The connection is more pronounced in some aspects of this project, such as custody given that a large number of the assets under discussion are held by custodians and intermediaries.

C. The subject matter of the project

37. The project is concerned with assets that are constituted of digital data which has certain features, including that it is amenable to control (in the functional sense), as described in the paragraphs below. The precise scope of the project will need to be a matter of discussion for the Working Group. However, it may not be necessary or desirable for the scope to be definitively determined at the commencement of the Working Group's discussions as this is an issue which will need to be kept under constant review throughout the deliberations of the Working Group. Indeed, it may even be better for the detailed discussion of scope to take place after discussion of the more substantive issues have helped to first define the broad contours of the project.

38. The project is not concerned with all types of digital data. As explained below, not all digital data can be characterised as an "asset", and there are even some types that could plausibly be considered as an "asset" which the Working Group may wish to exclude from the scope of the project. This section of the issues paper sets out some preliminary guidelines rather than precise definitions.

39. While the term "asset" can have many different meanings, it is used here in the sense of an object which has value ascribed to it; that is, people are prepared to transfer other objects of value (such as fiat currency) in order to acquire it. Such objects exist within systems that comprise hardware, software, and personal and community aspects, although the social structures and roles implicated in the process may not be well-defined and are sometimes obscured by claims that a system is purely technical, leading to an exclusive focus on its digital components. The project is concerned with assets which are transferable, and, in many cases, are designed to be traded.⁴ In keeping with the purposes of UNIDROIT, the focus is on digital assets that are created and transferred in the course of commercial transactions.

40. The focus of the project is on private law, and, in this context, this implies, generally though not exclusively, property law (widely construed). Therefore, in the first instance, this project is concerned with digital assets that are plausibly *objects of property rights*, or perhaps rights similar to property rights. The focus on proprietary rights, however, presents a difficulty in terms of distinguishing cause and effect. Current principles of property law in different jurisdictions yield contradictory answers to the question whether any particular type of electronic data can be the object of proprietary rights, and indeed suggest quite different approaches to conceptualising intangible representations of value generally. Not all types of electronic data that the project will examine are considered as "property" in some jurisdictions.⁵ As part of its mandate, the project may consider surveying the variety of approaches typically found across national jurisdictions in order to identify common problems with a view to assisting in the development of appropriate Principles. While it

⁴ References in this document to the transfer and transferability of digital assets are intended to refer as well to "transfers" that contemplate the disappearance, destruction, cancellation, or elimination of a digital asset and the resulting and corresponding derivative acquisition of other digital assets.

⁵ In Japan, the Tokyo District Court confirmed in a 2015 decision in the *MtGox* case that Bitcoin could not be classified as a "thing" for the purposes of the property law regime under the Civil Code of Japan (Tokyo District Court, *Plaintiff Z1 v. MtGox Co. Ltd.*, Case No. 33320 of 2014, Judgment, 5 August 2015) (<https://www.law.ox.ac.uk/research-subject-groups/commercial-law-centre/blog/2019/02/english-translation-mt-gox-judgment-legal>). In Germany, the government has released a draft bill which proposes to deem electronic securities without a paper certificate as objects of property pursuant to art. 90 of the BGB. (https://www.bmfv.de/SharedDocs/Gesetzgebungsverfahren/Dokumente/RefE_Einfuehrung_elektr_Wertpapier_e.pdf?__blob=publicationFile&v=1).

might be possible to make a catalogue of the “property status” of electronic data under the current law of any number of jurisdictions, this would not *per se* yield workable Principles for the development and harmonisation of private law. It would therefore be necessary to take a broader view of the subject matter to define the scope of this project, whose purpose is to develop a set of Principles, at the transnational level, that courts and legislatures can use to guide legal interpretation and reform.

41. The Working Group may wish to begin by considering some examples of existing types of digital data to assist with the task of more clearly delineating the scope of the study. This might include, first and foremost, cryptocurrencies (e.g. Bitcoin) and digital assets that in some fashion represent, are backed up by, or are linked to other assets (e.g., commodities). Types of electronic data which the Working Group may wish to consider leaving outside the scope of the project might include things like digital images, although it is possible that some types of data falling into these categories could have the factual features set out below, therefore potentially falling within the scope of the project. Given that these types of digital data are treated as objects of value in certain contexts, they could therefore plausibly be called “assets”, however, the Working Group may wish to exclude them for other specific reasons.

42. The principle of technology neutrality is also important in scope-setting and while DLT or blockchain technologies would constitute an important facet of the project’s scope, the Working Group should not consider itself restricted to any one specific technology in seeking to identify and articulate Principles. This also holds because while a plausible case can be made for the status of certain digital data on DLT as an asset, it would be incorrect to regard all DLT-based electronic data as “assets”. However, in many cases, DLT-based electronic data relates to an asset (tangible or intangible) that exists irrespective of the DLT-based electronic data (such as a debt, a share, or a piece of tangible property).

43. As mentioned in D.3 below, it is possible to analyse the DLT-based digital data alternatively as (a) a record of the transfer of an asset, or (b) as a separate asset in its own right. Whether this analysis is a suitable one, in what situations it applies and the legal ramifications of this analysis are all issues the project will have to consider. For present purposes, the term “digital assets” is used to include DLT-based digital data that has the factual features set out below, even though the term “assets” may be thought wrong or misleading. The distinction between DLT-based digital data that does not relate to an asset that exists irrespective of that data, and DLT-based digital data that does relate to such an asset is a very difficult one, and not one that can be decided at this stage. This distinction is a matter which the Working Group will discuss under D.3 as it concerns the taxonomy of digital assets rather than the scope of the project, in the sense that the question whether in any particular situation the DLT record is evidence of ownership of an off-chain asset or whether it constitutes an asset in its own right is a matter for the Working Group to discuss.

44. The question then arises: What are the *factual features* which distinguish those digital objects that should be recognised as objects of proprietary rights from those which should not? In this context, a functional approach could be called for, and the object’s amenability to *control* would seem of paramount importance. In previous work on the harmonisation of private law (for example the UNCITRAL Model Law on Electronic Transferable Records) the concept of control has been adopted as an analogue of possession, given that electronic records are not capable of possession in the ordinary legal sense, which implies amenability to *physical* possession in the factual sense. When defining the scope of the project, given that different jurisdictions have different legal definitions of control (indeed, sometimes the same jurisdiction uses ‘control’ to mean different things in different contexts) a legal concept of control may not be appropriate as a scope defining criterion, even if a particular definition of control could be adopted later on in recommendations as a requirement, for example, for a person to be a holder of a digital asset or for the application of an exception to the *nemo dat* principle. Accordingly, the Working Group may consider regarding “control” (to the extent possible) as a *factual* state of affairs (or a functional concept), rather than as a legal concept.

45. Other features may be of relevance to distinguishing categories of electronic data which fall within the scope of the project from those which do not. For example, the question whether a unit of data can be individuated from a broader volume of data might be significant, as might the question whether the “package” of data in question can be copied infinitely or is somehow protected from replication at will, or the question whether the data can be treated as an object of value by more than one person at a time (without any derogation of the others’ ability to use it) (e.g. a digital representation of a song or a piece of art).⁶ These features run together; for example, a unit of electronic data could be said to be rivalrous because it cannot be copied infinitely at will and because it can be individuated from a broader mass of electronic data. This relates to the deeper question of what kinds of electronic data should be considered “assets” at all. The Working Group may wish to confirm that much electronic data are not assets, and that the features indicated above, and control in particular, are likely to provide the criteria for determining this question as they define a discrete unit of electronic data as something of value to a person (natural or juridical) that can be traded with other actors.

46. In summary, digital assets are a subset of all types of electronic data, and the scope of the project relates to a subset of “digital assets”. In defining the scope of the project, the Working Group may wish to limit it to transferable assets, and in particular those which are usually created and transferred in the course of commercial transactions. It may wish to further specify that it is limited to digital data which can or should be the subject of property rights (or analogous rights).⁷ Insofar as possible, the scope should not be determined by legal concepts, but by factual (or functional) features of types of electronic data. Such features are likely to include:

- Whether a unit of data can be individuated from a broader corpus of data
- Whether a unit of data can be controlled (in a factual sense), including whether its controller can exclude others from using it
- Whether a unit of data is rivalrous, namely whether its use or “consumption” by one person precludes its “consumption” by another (a closely related question is whether its reproduction is restricted and/or has a marginal cost of more than zero)
- Whether a unit of data can be transferred, either within the relevant system or across systems

Questions for the Working Group:

- *Should the scope of the project be limited to digital assets that are transferable?*
- *If so, what is the meaning of transferability? Would this encompass “transfers” that contemplate the disappearance, destruction, cancellation, or elimination of a digital asset and the resulting and corresponding derivative acquisition of other digital assets?*
- *Should tradeability be another element that determines or affects the scope of the Principles?*
- *Should the Principles reflect other specific criteria to carefully exclude certain digital assets from the scope (i.e. electronic data such as digital images)?*

⁶ This feature does not exclude the possibility that a given asset might be owned jointly by multiple parties, or that its owner might grant e.g. use rights or securities rights to others; rather, it has to do with the preliminary question whether it is a fitting object of property rights in the first place.

⁷ It is noted that there are jurisdictions where tokens and other digital assets are not currently treated as property, but there is a growing consensus that they should be. See, for instance, Germany’s recent draft bill which proposes to deem electronic securities without a paper certificate as objects of property pursuant to art. 90 of the BGB. (https://www.bmiv.de/SharedDocs/Gesetzgebungsverfahren/Dokumente/RefE_Einfuehrung_elektr_Wertpapiere.pdf?__blob=publicationFile&v=1).

- *Would it be helpful to conduct a brief survey regarding the variety of approaches regarding the "property status" of electronic data typically found across national jurisdictions in order to identify common problems?*
- *Should the concept of "control" be regarded (to the extent possible) as a factual state of affairs (or a functional concept), rather than as a legal concept?*

D. Identify specific areas/issues of private law to be addressed

1. Issues relating to the contract involving digital assets

47. A wide range of issues in contract law with respect to digital assets could be identified. Currently, many of these are under thorough examination in various projects by several organisations.⁸ For instance, because of its nature, there may be situations where digital data can be copied or changed easily, and contract law should address and respond to this aspect properly. Also, where personal data is included, contract law (together with public regulation of personal data protection) should recognise claims of the person whose personal data is concerned against the person who has control of the relevant digital data. The Working Group may wish to conclude that issues in contract law should be considered primarily in relation to the holding, transfer, and collateralisation of digital assets, as defined above at paragraphs 37-39. Certain legal remedies in connection with the holding, transfer and collateralisation of digital assets may be attributed to contract law. For instance, in jurisdictions where digital assets are not characterised as property, remedies given to a customer against a custodian may be recognised in contract law. Thus, specific issues in contract law are expected to be identified and examined as this project proceeds. Except as they relate to transactions in digital assets which are subject to this project, the Working Group may be inclined to defer the examination of legal issues relating to smart contracts and artificial intelligence to various appropriate fora at UNCITRAL, ALI, ELI and other organisations. Where necessary, UNIDROIT may wish to consider setting up a group that would liaise with the projects at those organisations so as to examine the implications for existing UNIDROIT instruments such as the UNIDROIT Principles of International Commercial Contracts.

48. Another important dimension the Working Group may wish to consider includes legal issues relating to smart contracts and artificial intelligence (with the caveat that, technically speaking, many of the digital assets under examination are themselves smart contracts).

Questions for the Working Group:

- *Should contractual issues be considered as part of the Principles?*
- *If so, should these be primarily in relation to the holding, transfer, and collateralisation of digital assets?*
- *Should legal issues relating to smart contracts and artificial intelligence be considered?*

2. Acquisition, disposition, and competing claims

49. The discussion in this sub-section deals with digital assets generally and does not consider the issues relating to digital assets that involve a proprietary connection between a digital asset and another asset discussed below in D.3.

50. The Working Group may wish to consider issues relating to the acquisition and disposition of and competing claims to digital assets, including in particular those that relate to proprietary (or

⁸ For a representative and comprehensive study, see the ALI/ELI Principles for a Data Economy at <https://www.ali.org/projects/show/data-economy/>.

analogous) interests in digital assets. Once the law recognises a proprietary interest in an asset it should logically provide some protection to transferees. Acquisition of proprietary rights in digital assets may be by original acquisition (issue) or by derivative acquisition upon disposition. The analysis will consider basic, fundamental, building-block rules drawn from analogous rules applicable to the transfer, assignment, and acquisition of movables and intangibles generally. This sub-section addresses only the law governing acquisitions of digital assets in voluntary transactions occurring within a system, and thus does not cover transfers that may occur such as by way of succession or by operation of law pursuant to other laws or judicial process.

51. Common law and civil law systems emphasise the role of *nemo dat quod non habet* (one cannot give what one does not have) in the transfer and acquisition of property interests. Civil law generally limits recognition and transfer of ownership, including exceptions from the *nemo dat* principle, to tangible property.

52. The application of property law rules generally depends on the identifiability of property and some form of publicity, as well as the following of transfers of interests in property from one person to another. The application of property rules also sometimes requires “tracing” of interests, which may require formulas or other methodologies. These concepts are particularly challenging in the context of digital assets. Moreover, some digital assets are fungible, and some are not. Ether and Bitcoin are fungible, for example. Non-fungible digital assets represent a unique asset that cannot readily be interchanged with other digital assets, even if two non-fungible digital assets seem similar to one another. Non-fungible digital assets can include metadata, visuals, serial numbers and other characteristics that make them unique, and, thus, uniquely valuable. Examples of a non-fungible digital asset would include unique digital items like crypto art, crypto-collectibles, and crypto-gaming tokens.

53. Digital assets commonly exist as part of, or as layered software on top of, an account-based system or a transaction-based system. Many existing and future designs (e.g., the central bank digital currency) contemplate one or the other, or both types. The Ethereum network, for example, uses an account-based model to memorialise which network users own any given quantity of ether. This makes ether transactions and the method by which the Ethereum network keeps track of those transactions much like the bank account model used by banks. One ether owner can simply send ether to another Ethereum user’s account, and the Ethereum Virtual Machine will track the transaction in those account balances.

54. Other digital assets effectively disappear upon transfer with new digital assets being created for the benefit of acquirers. In this regard, Bitcoin provides an example. The Bitcoin blockchain does not use an account-based model, but rather a transaction-based model. As a result, owners of Bitcoin do not lower a balance in an account they hold when they send Bitcoin to another user. Rather, the Bitcoin blockchain tracks transactions (or put differently, it tracks transitions in state). Take, for example, Alice. Colloquially, we might say that Alice “owns 25 Bitcoins”. But what Alice actually has is the key to unlock a single unspent transaction output (UTXO) that the Bitcoin blockchain associates with 25 Bitcoins. If Alice wants to send 17 of those 25 Bitcoins to Bob, she cannot split off part of her single UTXO and send it to Bob while keeping the other eight in her “account.” Alice does not have an account. Alice must spend the whole 25 Bitcoins by creating two transactions: one transaction sending 17 Bitcoins to Bob, and one transaction of sending 8 Bitcoins to herself. As such, by unlocking her single UTXO and sending 17 Bitcoins to Bob, Alice creates two new UTXOs – one locking 17 Bitcoins to Bob and one locking 8 Bitcoins to Alice.

55. The acquisition of property free of conflicting claims is a feature of both common law and civil law systems, such as doctrines of good faith purchase or similar innocent acquisition rules. These are important exceptions to *nemo dat*. Some digital assets could be classified as a recognised asset type under existing laws, such as funds/money or negotiable instruments, for which existing take-

free rules could be applied. Others would not fall under any existing specific type. Some digital assets are traded on platforms/exchanges while others in peer-to-peer markets.

56. Take-free rules and negotiability aspects of digital assets would require the adoption and application of relevant standards. Standards such as the absence of disqualifying knowledge or notice, good faith, and taking of possession (delivery) of tangible movables are typical. For digital assets, the standards would likely include the adoption of an equivalent to possession or delivery of tangible movables. A point of departure might be the approach toward “control” of electronic transferable intangibles developed in the UNCITRAL Model Law on Transferable Records and the various national laws from which the Model Law drew inspiration.

57. Digital assets may be subject to a wrongful taking or interference (such as by “hacking” in the case of digital assets held and accessed through the internet). The application to digital assets of legal doctrines of recovery and liability, such as common-law conversion or vindicatory enforcement of rights in civil law systems, will be considered. For example, conversion has been recognised by the courts in the United States with respect to intangible assets, such as domain names on satisfaction of certain conditions (that may be similar to recognising a digital asset as property): (i) there must be an “interest capable of precise definition”; (ii) it must be “capable of exclusive control”; and (iii) “the putative owner must have established a legitimate claim to exclusivity”.⁹

58. The Working Group may also wish to consider issues of invalidity and reversal of transfers as well (see Geneva Securities Convention, Article 16).

Questions for the Working Group:

- *To what extent should digital assets have general attributes of negotiability?*
- *Should the notion of “control” of electronic transferable intangibles developed in the UNCITRAL Model Law on Transferable Records, or similar, be considered?*
- *Should issues of invalidity and reversal of transfers also be considered?*

3. The legal nature of a proprietary connection between digital data and another asset

59. As mentioned in paragraph 43 above, some types of digital data (that has the features of individuation, control and being non-rivalrous) can be structured so as to represent other assets, in such a way that the holder of the digital data purports to have a proprietary right to that other asset.¹⁰ The digital data in such a structure can be seen as a digital asset in its own right or can be seen merely as a digital record (see paragraph 62 below). The discussion in this paragraph assumes the former characterisation in order to make the terminology more straightforward. When the process of transfer (see footnote 4) of the digital asset takes place, the proprietary right to that other asset is transferred from A to B. One example is where a digital asset gives a right to physical goods such as gold (see e.g. <https://www.gcoin.com>) or art (see e.g. <https://en.cryptonomist.ch/2020/07/04/tokenized-art/>). Another example is where a digital asset represents a debt security, such as ‘tokenised’ corporate bonds (see e.g. <https://www.financemagnates.com/institutional-forex/exchanges/gibraltar-stock-exchange-to-offer-digital-debt-securities/>). The mechanism of linking one asset to another is sometimes called tokenisation, but what matters is the mechanism itself, and focusing on ‘tokens’ may be misleading

⁹ It is noted here that the United States of America differs from English law and the common law of other jurisdictions as well.

¹⁰ This discussion assumes the accuracy of all relevant assumptions and that all “real world” necessary steps have been taken extraneous to the relevant digital asset and platform on which it exists so as to ensure the intended results. For example, it assumes that the relevant “other asset” exists and is at all times maintained in a legally enforceable manner for the exclusive benefit of the holders of the digital assets.

in a proper legal analysis. The other asset will generally (but not necessarily) be an asset (tangible or intangible) that is not a digital asset. This type of digital asset is colloquially known by a number of different terms, including a “token” and a “coin”.¹¹

60. An important issue for the project to consider will be the legal nature of the link between the digital data and the other asset, which would include consideration of the following issues:

Questions for the Working Group:

- *Are terms such as “token” and “coin” accurate for the purposes of the Principles? If not, what might be plausible alternatives?*
- *What would be the appropriate legal and factual analysis when conceptualising and characterising the following situation of when the transfer of a digital asset or the digital data is changed in a manner to indicate a transfer, so as to result in the ostensible transfer of the proprietary right to the other asset?*
- *What is the position if a proprietary right to the “other asset” is transferred but the digital asset itself is not transferred or the digital data is not changed?*

61. Since it relates to proprietary rights, the legal analysis must consider the effect of such transfers on third parties. The legal analysis may vary depending on how the digital asset or data and the system on which it operates is structured, and so the Working Group may need to identify a number of possible analyses. The legal nature of this link may also affect the analysis of issues (II.D) 2, 6, 7, 8 and 9.

62. To give an indication of the scope of this issue, two possible analyses of the link are described in this paragraph, although the Working Group may identify other possible legal analyses. The first is that the digital data is itself a digital asset, and that an analysis that is analogous to that applying to a documentary intangible can apply. Through mercantile usage, and then legislation, a documentary intangible such as a negotiable instrument is a tangible object (a piece of paper) linked to an intangible so that transfer of the instrument transfers the intangible. This type of analysis could apply to a digital asset linked to another asset, although this would entail linking an intangible object (the digital asset) to another intangible (e.g. a debt security) or a tangible object (e.g. gold). The second analysis is to characterise the digital data as constituting an entry on a register which constitutes the root of title to the other asset (so that the data collectively was a title register), or, alternatively, evidence of title. One interesting question is whether, on this second analysis, legislation is necessary to constitute the digital data as the root of title (e.g. as was the case of recent legislation in the U.S. State of Delaware).

63. The connection under this heading does not include at least one other type of possible connection between a digital asset and another asset. The first is where the value of the digital asset is “backed by” or “pegged” to one or more other assets but the holder of that digital asset does not have any proprietary rights to those other assets (e.g. certain kinds of stablecoins¹²).

64. Finally, addressing the factual and legal relationship between a digital asset and “other assets” must confront an overarching reality: A law governing proprietary interests in digital assets

¹¹ In using the word “token” here, this document does not intend to limit discussion only to those tokens created under the ERC-20 standard. This document uses the term in its broadest technical sense to refer to any crypto-asset that exists at least one level in the technology stack higher than the protocol layer, including, but not limited to: ERC-20 standard tokens, ERC-721 non-fungible tokens, and non-native crypto-economic tokens (also called non-native protocol tokens), among others.

¹² A stablecoin is a kind of cryptocurrency designed to minimize the volatility of the price of the stablecoin, relative to some “stable” asset or basket of assets. A stablecoin can be pegged to a cryptocurrency, fiat money, or to exchange-traded commodities (such as precious metals or industrial metals).

that also would provide that interests in digital assets *ipso facto* determine interests in other assets necessarily would implicate the private law rules governing proprietary interests in every type of other asset that would be affected (not to mention the relevant choice-of-law rules). Such a far-reaching law would seem to be implausible and impractical. But this would be the import of a rule in a law governing digital assets providing that transfer of a digital asset (and the accompanying rights) carries with it *ipso facto* an interest in the other asset. Of course, transactions outside of the digital asset can be structured so as to reach this result, such as by setting aside the other assets under arrangements that ensure as a matter of contract and other applicable and relevant law that the assets are available for the economic benefit of the holders of the digital assets. This is what is happening (or is assumed or represented to be happening) today. The private law governing digital assets can provide, for example, that an acquirer obtains good title to the digital asset free and clear of conflicting claims. But it cannot as a practical matter ensure that the expected arrangements with respect to the other assets actually have been made and are effective under any potentially applicable law.

Questions for the Working Group:

- *How should the legal nature of the proprietary relationship between a digital asset and another, non-digital asset, be analysed?*
- *As analogous to that applying to a documentary intangible? As constituting an entry on a registry? Or, alternatively, in some other fashion?*
- *If the digital data is considered to be analogous to an entry on a registry, the Working Group may wish to consider what is needed to establish that registry (i.e. whether legislation is needed), and if not, what the evidential value of that registry would be.*

4. Accommodation of disparate types of assets and technologies

65. The challenges in determining the scope of the digital asset project, discussed in II.B. above, are present as well in considering the private law that should be addressed. The Principles to be developed must accommodate quite disparate types of assets and applicable technologies. Moreover, a goal of the Principles will be applicability not only to extant assets and technologies but also to those that will be created and employed in the future.

5. Provision of digital asset custody services

66. For many market participants the need to employ an intermediary for the acquisition and subsequent holding (custody) of digital assets for the acquirer is the most practical approach. Although such digital asset custody services raise many legal issues analogous to those that arise in many traditional custodial contexts, digital asset custody services also pose novel legal issues that the project should keep in mind. For example, at least two lawsuits in the U.S. have wrestled with the issue of whether a custodial service provider is required to provide its users access to a new cryptocurrency created by a third party (by hard fork).¹³ Each of these cases concluded that under the relevant contracts the custodian owed no duties and had no obligations with respect to the new cryptocurrencies. It may be appropriate for the project to consider Principles for such novel issues.

67. UNIDROIT has much experience with securities intermediaries (Geneva Securities Convention and Legislative Guide on Intermediated Securities). But custody of digital assets presents particular challenges for private law. The range of potential legal relationships that have traditionally been applicable for the custody of securities (such as title transfer, trust and/or bailment, agency, and

¹³ See *BDI Capital, LLC v. Bulbul Investments LLC*, No 1-18-cv-3392-AT, 2020 WL 1161100 (N.D.Ga. Mar. 11, 2020); *Archer v. Coinbase, Inc.*, No. CGC-18-565281, 2020 WL 4581809 (Cal. Ct. App. Aug. 10, 2020). For a similar issue in Japan, see *Tokyo District Court Judgment on 20 December 2019*, 1590 Kinyushojihanrei 41.

other contractual relationships) may not be suited or may need adjustments for application to digital assets, which raise particular issues. The vagueness of contractual terms governing custodial arrangements is another reason to consider Principles that would guide characterisation of the rights of clients of custodians and provide legal certainty. The lack of or only emerging regulatory responses to provide protections to clients of custodians underscores the need to consider such Principles.

68. A custodian will need to ensure that it safely and securely maintains custody over the digital assets held for clients (owners). This implicates duties under the private law as well as potential responsibilities under regulatory regimes for digital assets. Accordingly, the Working Group may wish to consider what relationship with a digital asset amounts to “custody” for purposes of triggering a custodian’s private law and regulatory obligations (which may differ from one another). It also will be important to consider what should be expected from a custodian to meet its obligations to safeguard client assets. Moreover, in the absence of regulatory regimes for such custody, or in the face of emerging but undeveloped and unproven regimes, private law rules may be essential for the protection of owners.

Questions for the Working Group:

- *What relationships among an owner, the relevant digital asset, and another person amount to “custody” for purposes of establishing a legal relationship of a particular type?*
- *For digital assets residing in a public blockchain environment, would custody require that the custodian maintain its own exclusive private key? Or would access to the owner’s private key suffice?*
- *How would multi-signature arrangements be treated?*
- *Can more than one person have custody of the digital assets?*

6. Taking of security over digital assets

69. All of the issues raised and discussed in D.2. above are relevant also in the context of security interests in digital assets. The discussions during the Exploratory Workshop in September suggested that certain types of digital assets, especially virtual currencies and stablecoins, are used as collateral more than others, such as digital securities and digital assets representing real assets. The motivations of parties to engage in secured transactions is often more to leverage their positions than extend financing. They also fail to properly protect their rights ignoring the applicable perfection mechanisms that expose them to various risks, including being treated as an unsecured creditor in insolvency.

70. A variety of legal issues arise in practice. Some of them, especially on enforcement of security interests, would benefit from coordination with the UNIDROIT project on Enforcement. The following discussion contemplates the application of emerged and emerging international standards for secured transactions law such as the UNCITRAL Model Law on Secured Transactions. To the extent feasible the project will also consider the application of other frameworks for secured transactions law, particularly those that developed rules specific to digital assets.

71. The Working Group may wish to consider whether the international standards provide an adequate set of rules for the taking of security interests in digital assets. It may also consider whether the general rules applicable to intangible assets are supportive of the emerging practices, or whether digital-assets specific approaches, particularly for third-party effectiveness (perfection) and transfers should be considered. Aside from these potential gaps, the Working Group should consider whether the existing rules that, for instance, require the secured creditor to take certain steps before disposal

of the collateral after default may need to be modified to better align with the industry practices and expectations.

72. Issues which the Working Group may wish to address include, for example:

- i. *Whether digital assets should be recognized as a specific type or types of collateral to allow the application of rules (e.g., on control) specific to that type only?*
- ii. *The Working Group may need to consider issues relating to all aspects of a secured transaction. For instance, for creation of a security interest,*
 - (a) *What kinds of property rights the holder has in a digital asset (coordinated with the discussion on proprietary interests)?*
 - (b) *How does a holder create a security interest where the digital asset is held by a custodian, including where the digital assets are held in a fungible bulk?*
- iii. *To what extent should the rules on third-party effectiveness through registration apply and alternative approaches (e.g., some form of control) considered?*
- iv. *Assuming "control" would be a method of third-party effectiveness, the actions necessary to acquire control for this purpose will need to be defined, and the following issues considered:*
 - (a) *Should "control" perfection have a super-priority over earlier registered interests?*
 - (b) *Should it be possible to create subordinate security interests in digital assets?*
 - (c) *Should it be possible for more than one creditor to have control over a digital asset?*
 - (d) *Should creditors holding security interests in digital assets have the benefit of good faith purchase or other take-free rules?*
- v. *What, if any, special rules should apply to the enforcement of security interests in digital assets? In addition, should certain rules that, for instance, require notification of third parties prior to disposal unless the collateral is sold on a recognised market continue to apply? The application of the existing rules may preclude automated enforcement and liquidation of the collateral triggered by oracles. As to the enforcement of security interests in digital assets, see sub-section D.8 below.*
- vi. *What are the duties of issuers and third parties (e.g., custodians; explored in detail in a separate section above) vis-à-vis secured creditors who made their security interests effective against third parties by registration?*
- vii. *Any approaches recommended for the taking of security in digital assets should be coordinated with insolvency law. For instance, if digital assets constitute cash proceeds, they may benefit from a special treatment in insolvency (see sub-section D.7 below).*

7. The legal treatment of digital assets in relation to insolvency proceedings

73. Private-law property rules provide an incomplete picture of the legal treatment of digital assets unless the treatment of those rights in insolvency proceedings also are considered. Categorisation of digital assets as some form of property or other rights enables their return to the holder or realisation by the insolvency administrator for the benefit of the estate. Further, realisation of value is not only affected by legal categorisation, but also the factual nature of digital assets.

(Enforcement of proprietary rights in digital assets outside of insolvency proceedings are discussed below in sub-section D.8.)

74. Given that the private law treatment of digital assets as property may affect whether digital assets belong to a debtor's insolvency estate (see UNCITRAL Legislative Guide on Insolvency Law, Recommendation 35), the Working Group may wish to consider the treatment of digital assets in the insolvency proceedings of various parties such as the "owner" of digital assets (assuming that the Working Group arrives at the conclusion that they are amenable to ownership in the legal sense), as well as custodians and intermediaries which would include the exchange service providers (e.g. crypto-fiat exchange service providers, crypto-crypto exchange service providers, crypto-asset stock exchange), or others holding security interests in the concerned assets.

75. As insolvency laws do not generally provide for rules specific to the treatment of digital assets, the Working Group may deem it desirable to conduct assessment of those approaches as to their suitability to digital assets and possible adaptations. A further nuance is that digital assets may be treated differently depending on their respective nature. Insolvency laws apply different rules to proceeds in the form of cash and its equivalents, which some digital assets, especially cryptocurrencies may be categorised as. Consequently, the Working Group may wish to consider exploring the need for and the methods of ensuring that the rights of the holders of digital assets would have the same treatment in insolvency proceedings as the rights in intellectual property and other intangibles.

76. The Working Group may also wish to consider other issues relating to insolvency proceedings, such as the valuation of digital assets (sharp fluctuations in value from the time of the filing to distribution may significantly impact the recovery of holders or creditors), or the practical challenges of identifying and tracing digital assets in the context of any form of stay of assets and suspension of actions in insolvency proceedings.

8. Remedies and Enforcement

77. The project will also have to consider issues of proprietary remedies and enforcement. In the first instance, this will require some engagement with the remedial mechanisms available in different legal systems and their appropriateness to intangible objects of proprietary rights (i.e. digital assets). In the civil law context, for example, questions will arise as to whether the remedy of *vindication* is available (especially in jurisdictions where the status of digital assets as "things" is unclear). Civil law systems typically distinguish between possessory and petitory remedies, such that the answer to questions such as whether digital assets are capable of possession, and whether "control" is analogous to possession, will determine the scope of remedies available. Across the common law world, there are divergent approaches to the question whether rights in intangibles can be protected by means of the tort of conversion. Issues are also likely to arise in the context of trusts. An important subset of questions under this section relates to following and tracing digital assets through transaction pathways that may be novel, as they are based on new technologies and business models.

78. In all cases, a general issue arises as to how property rights can be enforced over digital assets given the nature of the technical system in which digital assets are created, held, and dealt with. For example, where a distributed ledger system does not rely on a central counterparty with the authorisation to change the ledger in response to a court order, questions will arise concerning how property rights are enforced on the relevant ledger. However, the general question of how to enforce property rights in case of unknown possessors is not new *per se*, and it may be that existing concepts can be adapted to deal with enforcement of property rights to digital assets.

79. The project may also have to consider other issues relating to enforcement in addition to those discussed above. Issues relating to the enforcement of judgments over digital assets represent a point of articulation between the study and the UNIDROIT Study LXXVI on Principles of effective

enforcement. The project may also benefit from the emerging work at UNCITRAL on civil assets tracing and recovery.¹⁴ Decentralized, anonymous, autonomous, and irrevocable processes involved in distributed ledger technology (DLT) has raised unique challenges for the tracing and recovery of certain digital assets (e.g., cryptocurrency), particularly in insolvency for the purpose of enforcing the rights of creditors. An UNCITRAL Colloquium discussed various challenges that arise from tracing and recovering digital assets such as cryptocurrencies, air miles, and virtual online game items.

Questions for the Working Group:

- *Given the nature of the technical system in which digital assets are created, held, and dealt with, how should the question of the enforcement of property rights over digital assets be dealt with?*
- *Would it be useful to conduct a survey across different jurisdictions as to how issues of proprietary remedies and enforcement with regard to digital assets are currently dealt with?*
- *Can existing concepts be adapted to deal with enforcement of property rights to digital assets?*
- *Should the project also examine issues relating to the enforcement of judgments over digital assets?*
- *Should the project also consider examining issues relating to the tracing and recovery of digital assets?*

9. Law applicable to issues relating to digital assets

80. Developing Principles for the law applicable to digital assets presents another set of challenges. Issues may relate to the determination of the applicable law, jurisdiction, and the question of the choice of forum. Only the issues of the applicable law are within the scope of this project, while the other issues are likely to be explored by the Hague Conference on Private International Law or other organisations. Similarly, this project does not address various conflict of laws issues related to smart contracts and decentralised autonomous organisations.

81. The Working Group should consider whether any existing rules that determine the law applicable to transfers and other transactions with digital assets are adequate. The rules that apply to intangible assets generally may not reach the results expected by the industry.

82. In case gaps are discovered, the Working Group may consider whether the Principles should apply to all types of digital assets uniformly, or whether certain approaches specific to types of digital assets may need to be recommended, following the approach of the UNCITRAL Model Law on Secured Transactions that sets out a set of general rules for security interests in intangible assets (e.g., receivables), but also includes provisions for specific asset types (e.g., non-intermediated electronic securities).

83. The Working Group may consider whether to simply recognise conflicts of laws rules already provided for in international standards for certain types of digital assets, such as for digital assets credited to securities accounts, and whether to, in some other cases, leave the solution to be elaborated in another project of UNIDROIT, such as for the model law on warehouse receipts when a warehouse receipt is issued electronically.

¹⁴ See UNCITRAL, Report of the Colloquium on Civil Asset Tracing and Recovery (Vienna, 6 December 2019), para. 25 (UNCITRAL, Feb. 2020).

84. Other issues which may be considered include (i) contractual aspects, such as between issuer or obligor (if any) of a digital asset and an owner, between an owner and a secured creditor, and between an issuer or obligor and a secured creditor, etc.; and (ii) proprietary aspects. The project would not address more general issues of choice of law, such as public order and renvoi. Some of these issues may be considered differently depending on the nature of the system, whether permissioned or permissionless.

85. A party autonomy approach whereby the parties may select the governing law would be feasible for the contractual aspects, especially terms, internal operation, and governance of digital assets. For example, the applicable law might be specified as a component provision of a digital asset or a platform in which digital assets reside. Under generally accepted principles of private international law most forum courts would accept such a designation, subject to any overriding public policy considerations.

86. For proprietary effects (such as whether a digital asset is property and transferable, good faith purchase or other take-free rules and the priority of security interests), however, the principle of party autonomy would not be controlling. Developing principles for a choice-of-law rule for third-party effects may benefit from principles adopted in the UNCITRAL Model Law on Secured Transactions. Depending on the decision as to how the existing secured transactions laws should continue to apply, especially with respect to registration, the connecting factor for various types of methods of third-party effectiveness (registration and control) may differ (location of the grantor and law of the system for control)

87. In assessing these questions, the Working Group may wish to consider seeking possible guidance in the following sources:

- The Hague Securities Convention might provide useful guidance. The Convention provides for the “qualifying office test” under which the issues relevant to a transfer of intermediated securities will be governed by the law chosen by the parties in an account agreement as long as the intermediary has an office in the country whose law has been designated by the parties. A similar approach may apply to arrangements for custody of digital assets. (This approach may be problematic if the custodian does not have an office for an equivalent of this test to apply). Another approach would be for the law designated by a system in which a digital asset resides to be made applicable. (This approach could be problematic if a digital asset were to migrate from one system to another, however.)
- The Financial Markets Law Committee, based in London, England, considered a more limited party autonomy where the law designated by a system would be conditioned on some regulatory authorisation of the system itself. (This approach could be problematic as it may not be clear which regulator, and when, should provide the relevant authorization). The Committee discussed some other approaches but identified a number of challenges in their application.

Questions for the Working Group:

- *Are the existing rules that determine the law applicable to transfers and other transactions with digital assets adequate? Do they meet industry expectations?*
- *If not, should the Principles apply to all types of digital assets uniformly, or should certain approaches specific to types of digital assets be recommended similarly to the UNCITRAL Model Law on Secured Transactions which provides a set of general rules for security interests in intangible assets (e.g., receivables), but also includes provisions for specific asset types (e.g., non-intermediated electronic securities)?*

- *Should conflicts of laws rules already provided for in international standards for certain types of digital assets (e.g. digital assets credited to securities accounts) apply? Are there cases which would merit the elaboration of a solution in another project of UNIDROIT, such as for the model law on warehouse receipts when a warehouse receipt is issued electronically?*
- *Would the creation and adoption of a harmonised choice-of-law rule for third-party effects relating to digital assets, perhaps with the cooperation and participation of the Hague Conference, be a worthwhile goal?*

ANNEX I**ADDITIONAL RESOURCES**UNIDROIT Instruments

UNIDROIT, UNIDROIT Convention on Substantive Rules for Intermediated Securities (2013)

<https://www.unidroit.org/instruments/capital-markets/geneva-convention>

UNIDROIT, UNIDROIT Principles on the Operation of Close-Out Netting Provisions (2013)

<https://www.unidroit.org/instruments/capital-markets/netting>

UNIDROIT, UNIDROIT Principles of International Commercial Contracts (2016)

<https://www.unidroit.org/instruments/commercial-contracts/unidroit-Principles-2016>

UNIDROIT, UNIDROIT Legislative Guide on Intermediated Securities (2017)

<https://www.unidroit.org/instruments/capital-markets/legislative-guide>

Other Organizations

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