Report of the Permanent Editorial Board for the Uniform Commercial Code[*]

The "Tokenization" of Securities Transfers Under the Uniform Commercial Code (August 10, 2026)

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The Resolution states that:

> The underlying purposes and policies of the PEB Commentary are those specified in Section 1-103(a). A PEB Commentary should come within one or more of the following specific purposes, which should be made apparent at the beginning of the Commentary: (1) to resolve an ambiguity in the UCC by restating more clearly what the PEB considers to be the legal rule; (2) to state a preferred resolution of an issue on which judicial opinion or scholarly writing diverges; (3) to elaborate on the application of the UCC where the statute and/or the Official Comment leaves doubt as to the inclusion or exclusion of, or application to, particular circumstances or transactions; (4) consistent with Section 1-103(a)(2), to apply the principles of the UCC to new or changed circumstances; (5) to clarify or elaborate upon the operation of the UCC as it relates to other statutes (such as the Bankruptcy Code and federal and state consumer protection statutes) and general principles of law and equity pursuant to Section 1-103(b); or (6) to otherwise improve the operation of the UCC.

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Preface

Synopsys

This report explains how the *transfer*[1] of registered ownership of uncertificated securities can be "tokenized" by the straightforward application of the existing commercial law rules under the Uniform Commercial Code (the "UCC").[2] Under this approach, transferring control of a digital token would constitute the legal instruction to the issuer of an uncertificated security to transfer registered ownership of the associated uncertificated security to the recipient of the token. The report also explains how a transfer of control of a digital token can establish a control agreement among the issuer, the registered owner, and the transferee of control. In this way, an issuer can establish a system that enables efficient, near-instantaneous transfers of registration and establishment of a control agreement using digital asset infrastructure, such as blockchain technology and smart contracts, by application of existing UCC rules without awaiting further regulatory or statutory developments. This approach in many respects provides the functional equivalent of the tokenization of the security itself.

Basic statutory framework

The commercial law that provides the baseline commercial law rules governing securities[3] is Article 8. Securities may be either certificated, if represented by a (tangible, usually paper) security certificate, or uncertificated, if not represented by a certificate. Registered ownership of a certificated security is represented by a physical certificate issued in the registered owner's name and is also reflected on the books and records of the issuer. By contrast, registered ownership of an uncertificated security is reflected only on the books and records of the issuer. The system for registered ownership of securities under Article 8 is often referred to as the "direct-holding" system.[4]

Interests in securities also may be held in the "indirect-holding" system. The indirect-holding system involves a securities intermediary[5] ("Intermediary"), such as a stockbroker or a

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[1] This report does not propose the "tokenization" of the securities themselves. *See* Tokenization: Relevant Background and Context, below.

[2] The UCC, when referred to in this report, is to the Official Text of the UCC. Unless otherwise indicated, all references to a UCC section or comment are to that section or comment as stated in the UCC as modified or amended by the 2022 Amendments (defined in Overview of this report, below). All emphasis in quotations is added.

[3] The term "security" is defined in Section 8-102(a)(15). If an interest in an entity is not a "security" under Article 8, the approach described in this report is not applicable. That an interest is a security under other law does not determine whether the interest is a security under Article 8 and *vice versa*. *See* U.C.C. § 8-102(d) & cmt. 18.

[4] *See, e.g.*, U.C.C Article 8, Prefatory Note, I.D. ("Both the traditional paper-based system, and the uncertificated system contemplated by the 1978 amendments, can be described as 'direct' securities holding system …").

[5] U.C.C. § 8-102(a)(14) (defining "securities intermediary").

bank, which maintains "securities accounts"[6] for its customers (known as "entitlement holders"[7]). Intermediary credits interests in securities to the securities accounts of its entitlement holders. Intermediary, in turn, holds these securities credited to its entitlement holders' securities accounts either directly, as the registered owner in the direct-holding system, or indirectly, in a securities account Intermediary has with another ("upstream") Intermediary. The rights of the entitlement holders with respect to the securities held by Intermediary are referred to as "security entitlements."[8]

This report focuses on the use of digital tokens to transfer registered ownership and create control agreements relating to uncertificated securities in the direct-holding system. This approach does not involve tokenizing the securities themselves; rather, it concerns the mechanism by which registered ownership is transferred.[9] The discussion below considers in more detail the application of the Article 8 statutory framework for the process of transferring registered ownership.

Overview of this report

This report:

- Explains key terms and concepts involved in the tokenization of the transfer of securities and issuer control agreements under the UCC.

- Describes two case studies – one dealing with a sale of a "security"[10] (Case Study 1) and the other dealing with a security interest in a "security" (Case Study 2).

- Analyzes the commercial law rules under the UCC (primarily Articles 8 and 9) applicable to each case study.

- Explains the mechanism by which a token constitutes an instruction to the issuer of a security to transfer registered ownership of the security or establishes a control agreement with respect to the security. What is material to the analysis is transfer of control[11] of the token, not whether any property rights in the token are transferred.[12]

- Discusses for each case study how the analysis changes when the relevant securities are held through the indirect-holding system of Article 8.

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[6] U.C.C. § 8-501(a) (defining "securities account").

[7] U.C.C. § 8-102(a)(7) (defining "entitlement holder").

[8] U.C.C. § 8-102(a)(17) (defining "security entitlement").

[9] *See* Tokenization: Relevant Background and Context, below.

[10] U.C.C. § 8-102(a)(15) (defining "security").

[11] *See* text accompanying note 19 on the meaning of "control" of a token.

[12] *See* Case Study 1 – Sale, Case study details, Use of Alpha Tokens as instructions, below (explaining that the transfer of control of the Alpha Token, and not the transfer of a property interest in the Alpha Token to a purchaser, would constitute an "instruction").

- Explains that, in the context of this report, the rights of purchasers of securities under Articles 8 and 9 are not affected by whether the amendments to the UCC promulgated in 2022 (the "2022 Amendments") are in effect under the laws of the applicable jurisdiction. Where relevant, the discussion identifies the very limited situations in which the applicability of the 2022 Amendments should be considered.

Key Terms and Concepts

Tokens

This report uses the term "token" to refer to an electronic record[13] that is transferable and subject to "control" as defined in Section 12-105.[14] However, this report focuses on the use of tokens in the context of Article 8. Article 12 does not apply to the transactions addressed here and is relevant only to the factual aspects of control of a token. In the context of the 2022 Amendments not being in effect, the term "control" means that the factual conditions that would constitute "control" of an electronic record under Article 12 have been achieved.[15] Importantly, a token is not itself a security under Article 8,[16] but in the present context the token functions as a mechanism

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[13] *See* U.C.C. §§ 1-201(b)(16A) (defining "electronic") and 1-201(b)(31) (defining "record").

[14] Under Article 12, the token would be a "controllable electronic record" ("CER"). *See id.*; U.C.C. § 12-102(a)(1) (defining "controllable electronic record"). For purposes of a transfer of control of a token (as generally used in this report), however, references to control do not include control pursuant to Section 12-105(e) (control through another person). This is implicit in references to transfers of control of a token from and to Sally's and Bill's electronic "wallets" in Case Study 1, below. It is assumed that transfers of control of a token that would constitute an instruction or establish a control agreement would be communicated to an issuer at the time that a transfer of control is made. The term "token" is used to refer to a CER and does not refer to a security. *See* U.C.C. § 8-102, cmt. 18.

[15] More generally, in circumstances in which the 2022 Amendments do not (or may not) apply, the issuer should incorporate the *factual* conditions for the concepts of "control" and "controllable electronic record" under Article 12 into the applicable terms of its tokenization structure and the operation of its platform. *See In re Vital Pharm.*, 652 B.R. 392, 408-411 (S.D. Fla. 2023) (looking to Section 12-105 requirements for control as "useful" for determining "control over access" to a social media account, even though the 2022 Amendments were not then in effect). However, when Article 12 does not apply, only the powers included in the concept of control (including the power to transfer control), and no other functional aspects of Article 12, would be incorporated into the issuer's tokenization structure.

[16] U.C.C. § 8-102, cmt. 18. This report does not evaluate any of the benefits or drawbacks of tokenization of the transfer of securities. Nor does the report address (beyond very limited acknowledgments) other issues outside of the scope of the UCC, such as those relating to privacy or securities laws, other regulatory issues (including "Know Your Customer" and anti-money laundering laws and regulations), so-called "whitelisting" those permitted to hold securities or tokens of an issuer, permissioned versus permissionless systems for recording tokens, or platform technology generally including analytical attribution and security. The report takes a strictly functional approach to the use of a token in connection with the transfer of registered ownership of an uncertificated security and an issuer's entering into a control agreement. Beyond these functional aspects, it does not propose or endorse any particular structure for an issuer's books and records for registered ownership or any particular technology. The report recognizes that there may be other feasible approaches, consistent with the underlying statutory framework and policies of Article 8, for structuring the use of a token in connection with the transfer of registered ownership of an uncertificated security or creation of an effective control agreement.

that constitutes an instruction or establishes a control agreement relating to associated securities and forms a part of an issuer's recordkeeping and operational architecture.[17]

Platform

This report uses the term "platform" to refer to the system in which the token is maintained, whether using distributed ledger (including blockchain) technology or otherwise.[18] This report assumes that the platform is designed so that the holder of the token on the platform has factual control of the token, consistent with the definition of "control" in Section 12-105.

Controllable electronic record (the token)

Section 12-102 defines "controllable electronic record" (a "CER") as "a record stored in an electronic medium that can be subjected to control under Section 12-105.…"

Control of a CER (the token)

A person has "control" of a CER under Article 12 if the person:[19]

- can avail itself of substantially all of the benefits of the CER,
- has the exclusive power to prevent others from availing themselves of substantially all of the benefits of the CER,
- has the exclusive power to transfer control of the CER to another person, and
- has the ability to identify the person as having the exclusive powers.

Control of an uncertificated security

"Control" of a security under Section 8-106 is a fundamental concept under Article 8 and must not be mistaken for "control" of a CER under Article 12. Both concepts and both definitions of "control" are crucial for the application and understanding of the tokenization structure addressed in this report. This situation presents a challenge for ensuring clarity of exposition in this report and for the understanding of the report by its readers. Both a CER and an uncertificated security are intangibles and intangibles cannot be physically possessed. Although no doubt an oversimplification, it might be helpful to conceptualize the function of "control" as roughly equivalent to the role of "possession" of tangible personal property under the UCC.[20] However,

[17] *See* Case Study 1 – Sale, Case study details, Use of Alpha Tokens as instructions, below.

[18] *See id.*

[19] The concept of "control" of investment property (and in particular of an uncertificated security) under Article 8, as opposed to "control" of a token under Article 12, is also used in this report and is explained as the term is used.

[20] *See, e.g.*, U.C.C. § 12-105, cmt. 9 ("Control is intended to be a proxy for and a functional equivalent of the transfer of physical possession of goods.").

conceptualization may be helpful but is no substitute for the careful reading and application of statutory text.

Section 8-106(c) provides:

A purchaser has "control" of an uncertificated security [under Article 8] if:

> (1) the uncertificated security is delivered to the purchaser[[21]]; or
>
> (2) the issuer has agreed that it will comply with instructions originated by the purchaser without further consent by the registered owner.

Instructions

The concept of an "instruction" under Article 8 is central to this report. Under the applicable law and an issuer's organic documents, an issuer may issue uncertificated securities.[22] An issuer is required to transfer registration of an uncertificated security if the issuer is "presented"[23] with an "instruction" and certain conditions are met.[24] As defined in Article 8:

> "Instruction" means a *notification communicated* to the issuer of an uncertificated security which directs that the transfer of the security be registered or that the security be redeemed.[[25]]

Because, as stated in the definition, an instruction is a form of notification, the notification must be "communicated" to the issuer to be effective. Generally, a person has "notice" of a fact when the person "from all the facts and circumstances known to the person at the time in question, has

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[21] A "delivery" to a purchaser of an uncertificated security occurs when "the issuer registers the purchaser as the registered owner" or another person is the registered owner and holds for the purchaser. U.C.C. § 8-301(b).

[22] *See* U.C.C. § 8-102(a)(18) (defining "uncertificated security" as "a security that is not represented by a certificate" (i.e., a tangible (ordinarily *paper*) certificate).

[23] The word "presented" is not defined in Article 8. An instruction is a "notification" communicated to an issuer to make a transfer of registered ownership. U.C.C. § 8-102(a)(12). Section 8-403(b) refers to a demand not to register a transfer being "received" before "presentment" of the demand to the issuer. Inherent in this provision is that presentment occurs when the instruction has been "received" by the agreed mechanism of communication. *See* text at notes 25-27.

[24] U.C.C. § 8-401(a).

[25] U.C.C. § 8-102(a)(12).

reason to know that it exists."[26] A notification, in turn, is "communicated" to an issuer when the person sending the notification:

> [T]ransmit[s] information by any *mechanism* agreed upon by the persons transmitting and receiving the information.[[27]]

A method of notification may be the subject of an agreement, which can be implicit.[28]

Transfer agent

An issuer of securities may maintain its own books and records of the registered holders of its securities or it may do so through a transfer agent. A reference in this report to an issuer maintaining, changing, or taking other action with respect to the books and records should be understood to include the action of a transfer agent, if applicable.[29]

Caveats and Disclaimers: Functional Approach

This report employs a strictly functional approach to explaining how tokens may be used as instructions and to establish control agreements for purposes of Article 8. In particular, it does not describe (i) how an issuer should structure its securities and related tokens and platforms in this context or (ii) the technologies and methods that might be employed to facilitate these uses of tokens. This report is not a "how to" set of instructions for tokenizing the transfer of registered ownership of uncertificated securities and establishment of control agreements. Instead, its principal purpose is to explain the compatibility of the Article 8 regime with these uses of tokens. Stated otherwise, the report seeks to dispel concerns that Article 8 is an obstacle to tokenization but does not provide an instruction manual for overcoming other obstacles and challenges. The report leaves the evolution of the details of tokenization in this context to issuers, experts on the application of relevant technologies, and market practices.

This report does embrace as a heuristic the applicability of public key cryptography and platforms based on blockchain technology, albeit at a very high level of generality consistent with the report's functional approach. That perspective reflects the currently prevailing approach to tokenization. The report's central thesis—that tokenization is consistent with the relevant Article 8 rules—is grounded on the concept of control and the use of controllable electronic records and not on any specific technology.

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[26] U.C.C. § 1-202(a), (d).

[27] U.C.C. § 8-102(a)(6)(ii).

[28] *See* U.C.C. § 8-102, cmt. 6 ("Thus, use of an information transmission method might be found to be authorized by agreement, even though the parties have not explicitly so specified in a formal agreement.").

[29] *See* U.C.C. §§ 8-201(c) and 8-407. For debt securities, an indenture trustee may be charged with maintaining the issuer's books and records of registered ownership, but, for convenience, this report refers only to transfer agents.

Tokenization: Relevant Background and Context

Market interest in using tokens to facilitate transfers of securities has grown substantially. To date, however, much of the market activity has involved intermediaries, such as brokers and other custodians, using tokens intended to represent interests in securities they hold for entitlement holders or others, rather than issuers using tokens to transfer registered ownership on their own books and records.[30] A small number of issuers have begun to experiment with direct tokenization of registered ownership,[31] and regulatory attention to these developments has intensified.[32]

This report addresses the use of tokens for transfers of registered ownership of an uncertificated security or contractually to bind an issuer to a control agreement in a direct-holding environment (i.e., on the issuer's books) where an investor, or a securities intermediary that holds securities for its entitlement holders, becomes the registered owner of an uncertificated security. The report's focus is accordingly narrow. Given the focus on tokenizing transfers of registered ownership and the creation of control agreements, the report does not explore in detail what might be referred to as the tokenization of securities themselves. That said, there is no legal, formal, or widely accepted understanding of what it means to "tokenize a security." Perhaps the best understanding would be an arrangement in which the transfer of control of a token necessarily also transfers to the transferee, as a purchaser, a proprietary interest in the associated securities. However, given some apparent misconceptions about tokenization of securities that have circulated, some brief comments here may be useful.

It is typical in the securities markets for there to be an *ex ante* "trade" (buy-sell agreement) followed by a "settlement" (payment by the buyer to the seller and delivery of the securities by the seller to the buyer, which transfers to the buyer a proprietary interest in the securities).[33] In a direct-holding settlement context, as discussed here, a delivery[34] by the seller would normally be achieved by the transfer of registered ownership to the buyer, who would then acquire ownership (proprietary rights) in the securities pursuant to the terms of the trade and thereby become a purchaser.[35] In that situation, one might fairly characterize the securities being transferred as "tokenized," inasmuch as delivery resulting from transfer of control of the token completed the transaction that conferred ownership on the transferee. But absent the trade, transfer of registered

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[30] *See* Robinhood EU, Stock Tokens, https://robinhood.com/eu/en/ (offering derivative contracts that track U.S. equities); Backed Finance, xStocks, https://backed.fi (SPV-backed tokens representing interests in underlying equities); *see also* The Depository Tr. Co., SEC Staff No-Action Letter (Dec. 11, 2025).

[31] *See, e.g.*, Registration Statement on Form 1-A of Exodus Movement, Inc. (qualified by the SEC in 2024). A number of money market funds have also begun to use tokens to transfer fund interests. *See, e.g.*, J.P. Morgan Asset Management, "Tokenization: Transforming Money Market Funds for the Digital Era" (Dec. 16, 2025), available at https://am.jpmorgan.com/us/en/asset-management/liq/insights/liquidityinsights/updates/tokenization-transforming-money-market-funds-for-the-digital-era/.

[32] *See* Sec. & Exch. Comm'n, Div. of Corp. Fin., Div. of Inv. Mgmt., & Div. of Trading & Mkts., Statement on Tokenized Securities (Jan. 28, 2026) (discussing issuer-sponsored tokenized securities).

[33] *See* U.C.C. Article 8, Prefatory Note, III.B. ("To use securities parlance, Article 8 deals not with the trade, but with settlement of the trade.").

[34] *See* U.C.C. § 8-302(b) (delivery of an uncertificated security to a purchaser).

[35] *See* U.C.C. § 1-201(b)(29) (defining "purchase"), (30) (defining "purchaser").

ownership through transfer of control of the token would not necessarily result in the transfer of a proprietary interest to the transferee. It follows that the registered owner's control of the token would not constitute a tokenization of the associated securities (assuming the understanding of the "trade" concept mentioned above) at all times and in all circumstances—as in the absence of the trade between buyer and seller. For this report, no useful purpose is served by examining whether a token does or does not "tokenize" a security (or any other real-world asset). The analysis of any particular token associated with a real-world asset is necessarily *sui generis* and must be based on the law applicable to the asset and the contractual and other mechanisms connecting transfer of control of the token with that asset. For these reasons, this report focuses on the use of a token to give an instruction or create a control agreement, the particular effects of which depend on the applicable circumstances.

An issuer pursuing the approach to the use of tokens outlined here also would need to consider a broader range of issues, including other matters under Article 8 as well as securities laws and regulations, anti-money laundering and sanctions compliance, tax laws, the state corporate or business entity laws of the issuer, and the issuer's constitutive documents. Among the Article 8 issues an issuer must address are its duty to register transfers, conditions to that duty, and potential liability for breach of its duty to register or for wrongful registration.[36] Approaches to these matters vary among issuers, and at this time the related norms and standards in this context are only beginning to emerge. This report does not attempt to address these broader issues. It focuses only on the use of tokens as a mechanism to communicate instructions to an issuer to transfer registered ownership, or to bind an issuer to a control agreement, such as for the perfection and establishment of priority of a security interest.

Because under Article 8 the transfer of registered ownership of a certificated security typically involves the presentation of the security certificate representing the security (where tokenization would not be feasible), this report focuses solely on the tokenization of the transfer of registered ownership of uncertificated securities, not certificated securities.[37]

Case Study 1 – Sale of Alpha Shares

Case study details

The Alpha Shares: Alpha Corporation ("Alpha") is a corporation organized under the law of a state of the United States. Alpha issues shares (the "Alpha Shares") of stock to its investors. Alpha maintains books and records reflecting the identities of the registered owners of Alpha

[36] *See generally* U.C.C. §§ 8-401 to 8-404.

[37] *See* U.C.C. § 8-102, cmt. 18. Tokenization of a certificated security would not be feasible under Article 8. An issuer's duty to register transfer of a certificated security is invoked by presentation to the issuer of the certificated security (i.e., the security certificate). U.C.C. § 8-401(a). This is in contrast to presentation of an instruction—a communication—with respect to transfer of registered ownership of an uncertificated security.

Shares. The Alpha Shares, not being evidenced by physical certificates, are "uncertificated securities" under Article 8.[38]

The Alpha Tokens: Alpha creates, or causes to be created, tokens ("Alpha Tokens"). Each token is associated with one or more particular Alpha Shares.[39] Each Alpha Share is associated with only one Alpha Token. Upon registration by Alpha (the issuer of the Alpha Shares) in the name of a person,[40] that person becomes the registered owner of the Alpha Shares associated with an Alpha Token and will have control of that Alpha Token. The Alpha Tokens are recorded on the platform maintained by Alpha.[41] An Alpha Token itself is not a "security."[42] The transfer of control of an Alpha Token may function either as presentation of an "instruction" with respect to the Alpha Shares associated with the Alpha Token (in that context, as an "Instruction Token") or may establish a control agreement among Alpha, the registered owner, and the transferee of control of the Alpha Token (in that context, as a "Control Agreement Token").[43]

The platform for Alpha Tokens: The Alpha Tokens are maintained on a "platform," which is a system designed so that a person can have control of an Alpha Token, consistent with the definition of "control" in Section 12-105. For simplicity, this case study assumes that the platform is maintained by Alpha or its transfer agent as an integral component of Alpha's books and records for registered ownership of the Alpha Shares, as is typical in situations that do not involve tokenization. But if permissible under Alpha's organic documents and other (non-UCC) law, the platform could be maintained on behalf of Alpha by another service provider or even maintained, for example, on a public blockchain. Other matters relating to the platform are discussed elsewhere in this report.[44]

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[38] U.C.C. §§ 8-102(a)(15) (defining "security") and 8-102(a)(18) (defining "uncertificated security"). The Alpha Shares are "securities" under Article 8, because they are issued by a corporation. U.C.C. § 8-103(a). If the Alpha Shares were issued by a business trust or an investment company, they would also be securities under Article 8. U.C.C. § 8-103(a) and (b). If the Alpha Shares were instead interests in a partnership (general or limited) or limited liability company, they would generally be securities under Article 8 only if Alpha's partnership or LLC operating agreement provided for the interests to be securities under Article 8. U.C.C. § 8-103(c).

[39] Given its functional approach and for economy of exposition, this report refers generally to Alpha Tokens "associated with" Alpha Shares but does not address the details of that association. For example, a registered owner of Alpha Shares might, from time to time, require the issuer to create and provide the registered owner with control of multiple Alpha Tokens covering the Alpha Shares, each Alpha Token being associated with the number of Alpha Shares specified by the registered owner. Also, an Alpha Token might be associated with a current "balance" of the fluctuating number of shares with which the token is associated.

[40] U.C.C. § 1-201(b)(27) (defining "person").

[41] The platform for Alpha Tokens is discussed further below.

[42] *See* U.C.C. § 8-102, cmt. 18.

[43] Consistent with this report's functional approach, it does not and need not address whether Alpha's system should involve two different types of Alpha Tokens, one type of Alpha Token with differing designations based on the intended purpose of a transfer of control, or another approach.

[44] *See, e.g.*, Case Study 1 – Case study details, Sale, Mitigating Bill's Priority Risk, below (possibility that the platform "is" Alpha's books and records); note 72 (issuer's maintenance of certain records outside of

Use of Alpha Tokens as instructions: The use of the Alpha Token (as an Instruction Token) on the platform to give an instruction to Alpha to transfer the registered ownership of Alpha Shares associated with the Alpha Token would be the exclusive mechanism (as established by the issuer) to give an instruction to Alpha (as the issuer) to change the registered ownership of the associated Alpha Shares. Under this approach there is no other way to instruct the issuer to record a transfer of registered ownership of the associated Alpha Shares. As a consequence, in the context of a sale of the associated Alpha Shares, the transfer of control of the Alpha Token on the platform on which the Alpha Token is recorded constitutes an instruction to Alpha to transfer registration of the Alpha Shares associated with the Alpha Token to the transferee on the books and records of Alpha maintained by Alpha to record the registered owners of the Alpha Shares.[45]

Once the instruction is presented to Alpha, Alpha becomes obligated to register the transfer of the Alpha Shares to the transferee.[46] Correspondingly, upon presentment of the instruction, Alpha is no longer obligated to treat the transferor as the registered owner.[47]

The terms of the Alpha Token imposed by Alpha limit the use of the Alpha Token (as an Instruction Token) by the person in control of the Alpha Token to giving Alpha an instruction to register a transfer of the Alpha Shares. Used as the mechanism for communicating the instruction, the Alpha Token has no stored or independent value and serves no other purpose. The power to give an instruction by transferring control of an Alpha Token derives from control of the Alpha Token and not from any property interest in the Alpha Token itself.[48] Consistent with the limited purpose of an Alpha Token (as an Instruction Token) as the mechanism used to communicate an

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the platform and platform based on distributed ledger (including blockchain) technology under Delaware law).

[45] *See* U.C.C. § 8-102, cmt. 18, Example 1. It is useful here to reiterate that it is assumed that transfers of control of a token that would constitute an instruction or establish a control agreement would be communicated to an issuer at the time that a transfer of control is made. *See* note 14. References in this report to a "transfer" of a security mean a transfer of an interest in a security pursuant to Article 8 or otherwise or a transfer of the registration of ownership on the books and records of an issuer, as the context requires. Of course, a property interest in a security may be transferred by other means, such as by a purchaser under the common law, by the creation of a security interest (as discussed below), or by operation of law pursuant to legal process or rules of descent and distribution. *See* U.C.C. § 8-302, cmt. 2.

[46] U.C.C. § 8-401(a). The conclusion that the obligation is incurred by the issuer assumes that the conditions specified in Section 8-401(a) have been satisfied, including the eligibility of the transferee of control of the Alpha Token to become a holder of the securities, compliance with any restrictions on transfer, and compliance with legal and regulatory requirements. *See also* note 16. An instruction, including, under this tokenization structure, the transfer of control of the Alpha Token, is the functional equivalent of the presentation of a security certificate, indorsed by the transferor on the certificate or with an accompanying stock power signed by the transferor, in the context of a transfer of registered ownership of a certificated security. *See* U.C.C. § 8-401(a).

[47] U.C.C. § 8-207.

[48] This is the general rule in Article 12 that a person can have control of a CER without having a property interest in the CER. *See* U.C.C. § 12-104, cmt. 5 ("Under Section 12-105, a person may have control of a controllable electronic record even if the person has no property interest in the controllable electronic record.").

instruction to Alpha and because the Alpha Tokens are essential components of maintaining Alpha's books and records as to changes in registered ownership, the presentation of an instruction resulting from the transfer of control of the Alpha Token does not thereby transfer any property interest in the Alpha Token. Consequently, the transferee of control is not a purchaser of the Alpha Token. Any property interest in the Alpha Token itself has no bearing on the transfer of registered ownership of the associated Alpha Shares or on rights in the Alpha Shares.[49] The transfer of the registered ownership of the Alpha Shares is caused by the transfer of *control* of the Alpha Token, resulting in an instruction to the issuer.

Use of Alpha Tokens for establishing a control agreement: In addition to transferring control of an Alpha Token (as an Instruction Token) for presentation of an instruction for a transfer of registered ownership, a registered owner could transfer control of the Alpha Token (as a Control Agreement Token) to establish (with the issuer's consent already provided for) a control agreement with respect to a purchaser's *control of the Alpha Shares* associated with the Alpha Token.[50] A purchaser may acquire control of an uncertificated security if the issuer agrees "that it will comply with instructions originated by the purchaser without further consent by the registered owner."[51]

In conformity with Alpha's organic documents and consistent with applicable other law, a registered owner's transfer of control of an Alpha Token (as a Control Agreement Token) would constitute Alpha's agreement with the transferee of control of the Alpha Token and the registered owner that Alpha will comply with instructions concerning the Alpha Shares originated by that transferee of control without further consent of the registered owner.[52] The purchaser thereafter could present an instruction for the transfer of registered ownership of the Alpha Shares by

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[49] We do not address in this report whether an Alpha Token is subject to a property interest and, if so, who owns the Alpha Token. The owner of any property interest in the Alpha Tokens might be Alpha, Alpha's transfer agent, a provider of services or software relating to Alpha's books and records relating to registered ownership, or another person. As stated in the text, ownership of the Alpha Token does not have a role in Alpha's tokenization structure for transfer of registered ownership of the Alpha Shares.

[50] On the important distinction between "control" of an uncertificated security, such as the Alpha Shares, under Article 8 and "control" of a CER, as "control" is defined under Article 12, see Key Terms and Concepts, Control of a CER (token) and Control of an uncertificated security, above.

[51] U.C.C. § 8-106(c)(2). The control agreement does not have to be signed. The registered owner may retain the right and power to give instructions, the purchaser with control may have the exclusive power and right to give instructions, or the agreement of the parties may provide other variations.

[52] A typical use of an issuer control agreement is for providing control of an uncertificated security to a secured party for perfection of a security interest in the uncertificated security and for obtaining priority of security interests perfected by control. *See* U.C.C. §§ 8-106(c)(2) (control of uncertificated security); 9-106(a) (control of uncertificated security); 9-314(a) (perfection by control); 9-328(1), (2) (priority of security interest perfected by control). A control agreement also may be used for the benefit of other purchasers, such as a buyer that may be a prospective registered owner. *See* Case Study 1 - Sale, Case study details, Mitigating Bill's priority risk, below.

transferring control of the Alpha Token (as an Instruction Token) to a transferee of control, thereby instructing Alpha to transfer registered ownership to the transferee.[53]

> Example: Using the Alpha Token to transfer registered ownership of Alpha Shares to a buyer

Bill wants to acquire Alpha Shares. Sally and Bill agree that Sally will sell her Alpha Shares to Bill. Pursuant to their agreement (sometimes referred to as a "trade"), Sally transfers to Bill control of the Alpha Token (as an Instruction Token) associated with the Alpha Shares.[54] Sally transfers control of the Alpha Token by causing control of the Alpha Token to be transferred from control by Sally's electronic wallet associated with the platform maintained by or on behalf of Alpha to control by Bill's electronic wallet associated with the platform.[55] The transfer of control of the Alpha Token to Bill's electronic wallet constitutes an instruction from Sally to Alpha for Alpha to re-register into Bill's name the Alpha Shares associated with the Alpha Token. That instruction is accomplished by the transfer of control of the Alpha Token.

One may ask why the Alpha Token is distinguished from the Alpha Shares associated with the Alpha Token. The answer is that the Alpha Token is only an electronic record and in Sally's hands its function (as an Instruction Token) under Article 8 is limited to Sally's right and power to give an instruction to Alpha to transfer registered ownership of the Alpha Shares associated with the Alpha Token. Sally's right derives from her status as the registered owner and her power derives from her control of the Alpha Token (as an Instruction Token). Alpha has a corresponding duty to register the transfer. No other power or right is evidenced by or linked to the Alpha Token (as an Instruction Token) itself.[56]

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[53] Alpha's agreement with the registered owner could extend to compliance with instructions given by successive onward transferees of control of the Alpha Token (as a Control Agreement Token) so long as there had been no change in registered ownership. The person in control of an Alpha Token has the power to give an instruction to Alpha by transferring control of the Alpha Token. But only when control of an Alpha Token is transferred (as a Control Agreement Token) would it operate as such and not as an instruction (i.e., not to initiate a transfer of registered ownership). However, to reiterate and as consistent with this report's functional approach, this report does not address the specifics of how the issuer's system might differentiate these two uses.

[54] For simplicity, considering the limited scope of this report, this case study assumes a private sale of the Alpha Shares. In reality, a sale (trade) might take place on a trading platform between parties that are not aware of the other party's identity and may be subject to a formal system for settlement of the trade (i.e., payment for and transfer—colloquially, a "delivery"—of the Alpha Shares to the buyer).

[55] For convenience and simplification, additional references to transfers of control are to transfers of control of the Alpha Token from Sally's electronic wallet to Bill's electronic wallet. This report does this even though, as a technical matter, for example, a digital electronic wallet does not contain tokens as such. Rather, a digital electronic wallet contains software to generate and manage use of cryptographic key pairs. The keys enable the movement of the tokens from an address Sally's electronic wallet controls to an address Bill's electronic wallet controls. Moreover, a transfer of control also could result from a transfer of control to a blockchain address that is not an electronic "wallet."

[56] If other powers or rights purport to be evidenced by or linked to an electronic record such as the Alpha Token, whether a transfer of control of or an interest in the electronic record also transfers those other

Sally's exclusive right and power to instruct Alpha to transfer registered ownership of the Alpha Shares derives from Article 8, which recognizes registered owners as appropriate persons entitled to originate such instructions.[57] Control of the Alpha Token is the mechanism through which Sally exercises that right, but Article 8—not control of the token as such—is the source of the right.

When the UCC applies to a transaction, the transfer of one object of itself transfers another object only if the UCC expressly provides for that result (displacing any common law). For example, whether a transfer of an electronic document of title also transfers a right to the goods evidenced by the electronic document of title is determined by Article 7. Without the provisions of Article 7, the transfer of the data on the electronic document of title would not have any effect on the right to the goods themselves. Here, the law relating to transfer of the Alpha Shares, in addition to the applicable laws relating to Alpha's internal affairs, is Article 8. Article 8 does not have a provision for a security to be evidenced by a token with the same effect as a security evidenced by a certificate.[58] A transfer of Sally's property interest in the Alpha Shares to Bill as a purchaser of the Alpha Shares themselves must occur under Article 8 or other applicable law, not solely by the transfer of control of the Alpha Token.[59] A transfer of control of the Alpha Token serves only as the mechanism through which Sally may exercise her Article 8 right to instruct Alpha to transfer the registered ownership of the associated Alpha Shares to Bill.

This distinction between the Alpha Token (as an Instruction Token), being only data embodying a power to give an instruction to transfer registered ownership of the Alpha Shares, and the Alpha Shares themselves causes us to examine what relevant powers or rights (or both) that Bill has separately in relation to the Alpha Token and in the Alpha Shares.

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powers or rights is determined under the law governing those powers or rights. The law governing the electronic record—here, Article 12, if applicable, or other applicable law—determines questions of control over that record but does not itself determine whether associated rights to the security transfer along with control. The distinction between data on an electronic record and rights purported to be evidenced by or otherwise linked to the electronic record is further explained in the Prefatory Note to Article 12. U.C.C. Article 12, Prefatory Note, 4.a. It is quite plausible that the same result would apply even if Article 12 were not applicable.

[57] U.C.C. §§ 8-107(a)(2) (defining "appropriate person" as the registered owner of an uncertificated security with respect to an instruction); 8-401(a)(2) (duty of issuer to register transfer if instruction made by appropriate person).

[58] *See* note 37 and accompanying text.

[59] Part 3 of Article 8 addresses the transfer of directly held securities. *See also, e.g.*, Delaware General Corporation Law § 201 (referring to Article 8 for the law governing transfer of shares in a Delaware corporation).

Take free rule

The Alpha Shares are uncertificated securities under Article 8. The take free rule[60] under Section 8-303 applies if Bill is a "protected purchaser" under that section.[61] Under that rule, a protected purchaser acquires an interest in a security free of any adverse claims. For Bill to be a protected purchaser of the Alpha Shares under Section 8-303(a), Bill must obtain "control" of the Alpha Shares for value and without notice of any adverse claim to the Alpha Shares.[62] "Control" of the Alpha Shares (which are uncertificated securities) under Article 8 must be distinguished from "control" of the Alpha Token (which is a CER), as defined in Article 12.[63] An adverse claim is "a claim that a claimant has a property interest in a financial asset [e.g., the Alpha Shares] and that it is a violation of the rights of the claimant for another person to hold, transfer, or deal with the financial asset."[64]

One method for Bill to obtain "control" of the Alpha Shares is for the Alpha Shares to be delivered to Bill.[65] Delivery occurs when Bill becomes the registered owner of the Alpha Shares on the books and records of Alpha.[66] This is a typical goal of a buyer of securities who wishes to hold securities directly. If Bill is a protected purchaser of the Alpha Shares, his rights to the Alpha Shares would be free of adverse claims that might have existed at the time that Bill becomes a protected purchaser.[67]

[60] This report uses the phrase "take free" rule to refer to a rule by which the transferee of an asset acquires the asset free of designated adverse property claims to the asset. There is a limited "take free" rule in The American Law Institute's Restatement of the Law Third, Restitution and Unjust Enrichment § 66 (A.L.I. 2011), which applies only to taking free of equitable interests. Where the UCC applies to a transaction, the UCC's provision of or absence of a "take free" rule should "displace" any common law rule that might otherwise apply. U.C.C. § 1-103(b).

[61] U.C.C. § 8-303(a) (defining "protected purchaser"). If the equity interests were not securities under Article 8, e.g., they were interests in a partnership or limited liability company whose partnership or operating agreement did not provide for the interests to be securities under Article 8, the sale of the equity interests would be outside of the scope of the UCC, and generally no take-free rules would be applicable under the common law. U.C.C. § 8-103.

[62] U.C.C. § 8-303(a) (protected purchaser requirements), (b) (protected purchaser takes free of adverse claims).

[63] *See* Key Terms and Concepts, Control of a CER (token) and Control of an uncertificated security, above. The following discussion addresses in more detail control of the Alpha Shares.

[64] U.C.C. § 8-102(a)(1) (defining "adverse claim"). Section 8-105 provides when a transferee has "notice" of an adverse claim.

[65] U.C.C. § 8-106(c)(1) ("control" of uncertificated security by delivery). Another method for a purchaser to obtain control on an uncertificated security under Article 8 is through a control agreement pursuant to Section 8-106(c)(2). *See* Key Terms and Concepts, Control of an uncertificated security, above.

[66] U.C.C. § 8-301(b)(1) ("delivery" of an uncertificated security occurs by the issuer's registration of the purchaser as registered owner).

[67] U.C.C. § 8-303(b).

Mitigating Bill's priority risk

As explained above, Bill cannot be a protected purchaser of the Alpha Shares under Article 8 unless Bill has obtained control of the Alpha Shares.[68] Bill may obtain control by delivery of the Alpha Shares to Bill or pursuant to a control agreement.

Delivery of the Alpha Shares: As uncertificated securities, the Alpha Shares are delivered to Bill when they have been registered by the issuer in Bill's name as owner.[69] Bill will receive delivery and thereby have control of the Alpha Shares by the method of becoming the registered owner only when the instruction to make the transfer of registration to Bill has been presented to Alpha by the transfer of control of the Alpha Token to Bill on the platform and *then* Alpha indicates on Alpha's books and records that Bill is the registered owner of the Alpha Shares.[70] Bill will not be eligible to be a protected purchaser until all of these events occur (or Bill obtains control by another method).

The possible temporal "gap" between the time control of the Alpha Token (as an Instruction Token) is transferred to Bill's electronic wallet and the time Bill becomes the registered owner of the Alpha Shares on Alpha's books and records poses some risk to Bill. For example, during that gap period Bill could receive notice of an adverse claim to the Alpha Shares, an adverse claimant might make a demand on the issuer not to transfer registration of ownership, or the issuer might be served with legal process preventing the transfer of registration of ownership.[71] Those events could prevent, or at least delay, the time when Bill would become a protected purchaser. The gap period risk can be greatly reduced or eliminated if, for example, Alpha's platform "is" the books and records of Alpha and thus the transfer of control of the Alpha Token to Bill's electronic wallet immediately or concurrently accomplishes the registration of the Alpha Shares in Bill's name as the registered owner (i.e., the transfer to Bill of control of the Alpha Token (as an Instruction Token) *ipso facto* constitutes a transfer of the registered ownership to Bill and therefore "delivery" to Bill).[72] Bill would thereby be eligible to qualify as a protected purchaser if the other conditions

[68] This discussion assumes that, at the time Bill obtains control of the Alpha Shares, Bill also will have become a purchaser (here, the owner) of the shares. This report does not address arrangements between Sally and Bill for their agreement as to the terms of the sale or Bill's payment (or other transfer of value) to Sally. *See* note 54.

[69] *See* U.C.C. § 8-301(b)(1).

[70] U.C.C. § 8-401.

[71] *See* U.C.C. §§ 8-401; 8-403; 8-404.

[72] If authorized by Alpha's organic documents and applicable law outside of the scope of the UCC, and as contemplated in the text accompanying this note, the platform itself might constitute the books and records of Alpha. Delaware already has such a provision in place, authorizing a Delaware corporation to use a platform based on distributed ledger (including blockchain) technology as the corporation's stock ledger. *See* Delaware General Corporation Law § 224 ("Any records administered by or on behalf of the corporation in the regular course of its business, including its stock ledger…, may be kept on, or by means of, or be in the form of, any information storage device, method, or 1 or more electronic networks or databases (including 1 or more distributed electronic networks or databases) …"). Delaware has similar rules for limited liability companies, limited partnerships, and general partnerships. *See* Delaware Title 6, §§ 18-305(d), 17-305(c), and 15-403(c). Even so, issuers currently adopting tokenization systems for their registration records normally maintain personal identification information on their security holders in

were met, thus substantially mitigating the gap period risk.[73] Moreover, an issuer's adoption of this approach would mean that the Alpha Token would (purely as a functional matter, not in a legal sense) "represent" the Alpha Shares because transfer of control of the Alpha Token would, as a practical matter, transfer registered ownership of the Alpha Shares to the transferee of control of the Alpha Token.[74]

Control of the Alpha Shares pursuant to a control agreement: Bill also could eliminate the gap period risk by obtaining control of the Alpha Shares through the use of a control agreement instead of by delivery of the Alpha Shares. This approach would require the issuer (Alpha) to agree "that it will comply with instructions originated by the purchaser [Bill] without further consent by the registered owner [Sally]."[75] Such a control agreement could be achieved by Sally transferring control of the Alpha Token (as a Control Agreement Token) from Sally's electronic wallet to Bill's electronic wallet on the platform.[76] The goal of the control agreement approach would be that, at the time of transfer of control of the Alpha Shares pursuant to such a Control Agreement Token, Bill would become eligible to be a protected purchaser of the Alpha Shares if Bill meets the other requirements for protected purchaser status.[77] The gap period risk would thereby be eliminated as

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records associated with but outside of such a platform. This report does not address state or federal rules relating to privacy or securities regulation, including the regulation of transfer agents.

[73] Even this arrangement may impose at least some delay between the time that Sally "sends" the Alpha Token to Bill's electronic wallet and the time Bill becomes the registered owner, depending on the technology involved and any applicable checks for compliance with restrictions on transfers or for Bill's eligibility under applicable "whitelisting" arrangements. Whether a gap period could be absolutely eliminated (or reduced to a de minimis period) would depend on the applicable technology and is beyond the scope of this report.

[74] Under this arrangement the transfer of control of the Alpha Token effectively transfers the registered ownership of the Alpha Shares from Sally to Bill on the issuer's books (i.e., the platform). For a certificated security, Article 8 draws a distinction between the security (registered ownership of which is reflected by the issuer's books and records) and a security certificate that represents the security. No such distinction is drawn for an uncertificated security. *See* U.C.C. § 8-102, cmt. 18. But Alpha's books for recording registered ownership (i.e., the data managed by the relevant software on the platform) are distinct from the Alpha Tokens, which are electronic records extrinsic to those books and which function as communication mechanisms constituting (in this context) instructions. The simplified examples of how the Alpha Tokens are used in this case study provide a functional and useful illustration. Issuers, transfer agents, clearing corporations, and others may well develop other approaches for implementing tokenization of transfers of registered ownership in compliance with Article 8.

[75] U.C.C. § 8-106(c)(2).

[76] *See* notes 50-52 and accompanying text (discussing establishment and use of Control Agreement Tokens).

[77] In this case, the transfer of control of the Control Agreement Token would not operate by itself as an instruction to change registered ownership of the Alpha Shares to Bill. Although Bill would not receive a delivery of the shares under this approach, Bill would still be a purchaser of the Alpha Shares and would have control of the Alpha Shares. U.C.C. § 1-201(a)(29) (defining "purchase"), (30) (defining "purchaser"); § 8-106(c)(2) (control of uncertificated security). UCC § 8-104(a)(1) recites the means of acquiring "a security or an interest therein" by a purchaser "under this Article [8]," which is by a delivery to the purchaser. However, a delivery is not the exclusive means by which a purchaser may acquire an interest in a security. *See* note 45; *see also* 7 Hawkland UCC Series § 8-104:2 (Nov. 2024 Update):

to the Alpha Shares. Having obtained control under the control agreement by means of the transfer of the Alpha Token (as a Control Agreement Token) to Bill, Bill could then exercise his power to instruct Alpha to transfer registered ownership of the Alpha Shares to himself, resulting in Alpha (the issuer) registering Bill as the owner of the Alpha Shares on the books and records of Alpha.[78]

Other considerations related to "gap" period: The foregoing discussion focused on mitigating a purchaser's gap period priority risk. However, it is important to note that many other practical and business considerations also may provide strong incentives for issuers and purchasers of uncertificated securities to prefer an infrastructure that would eliminate or minimize the gap period.

Rights of protected purchaser not dependent on 2022 Amendments

The rights of a protected purchaser under Article 8 do not depend on whether the 2022 Amendments are in effect. If those amendments are in effect, the Alpha Token would be a "controllable electronic record" under Article 12.[79] As a controllable electronic record, the Alpha Token is not a "security" under Article 8.[80] The Alpha Shares themselves would still be uncertificated securities under Article 8.[81] Article 8 governs the rights of a transferee of the Alpha

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> [UCC § 8-104(a)] . . . states that delivery of a security under section 8-301 and acquisition of a security entitlement under section 8-501 are the two mechanisms by which a person acquires a security or interest therein "under this Article." Subsection 8-104(a) does not state that the only way that a person can obtain a property interest in a security is by pursuing these two mechanisms. . . . Although the Article 8 mechanisms are undoubtedly the most common and perhaps most significant means by which property interests can be acquired in securities, these mechanisms are not exclusive.

[78] This strictly functional description does not address the technical aspects of how the Alpha Token would be structured to result in Bill becoming the registered owner. Of course, Bill also could transfer the Alpha Token to another person that could become the registered owner. This report also does not address the considerations that an issuer might consider in deciding whether to accommodate either of the methods of eliminating the gap period discussed here or whether the use of a Control Agreement Token would be compatible with the goals of tokenization of instructions and existing and emerging systems for trading and settlement for uncertificated securities associated with tokens.

[79] U.C.C. § 12-102(a)(1) (defining "controllable electronic record"). The Alpha Token is a record that is in electronic form and is subject to "control," because the holder of the Alpha Token on the platform (i) can avail the holder of substantially all of the benefits of the Alpha Token (i.e., the power to originate instructions to Alpha to transfer the Alpha Shares on the books and records of Alpha), (ii) has the exclusive power to prevent others from availing themselves of substantially all of the benefits of the Alpha Token, (iii) has the exclusive power to transfer control of the Alpha Token to another person, and (iv) has the ability to identify the holder as having the exclusive powers. *See* U.C.C. § 12-105 (requirements for "control" of a controllable electronic record).

[80] U.C.C. § 8-102, cmt. 18 ("a controllable electronic record is not itself a 'security'"); *see also* U.C.C. § 12-102(a)(1) ("the term [controllable electronic record] does not include … investment property").

[81] Because the Alpha Shares are investment property, they cannot be controllable electronic records. U.C.C. § 12-102(a)(1) (second sentence); *see also* U.C.C. § 9-102(a)(49) (defining "investment property").

Shares. The analysis of those rights is the same for the Alpha Shares under Article 8, whether or not the 2022 Amendments are in effect.[82]

Article 12 governs certain powers and potential rights of a consensual transferee of an interest in (i.e., a purchaser of) a controllable electronic record, such as the Alpha Token. However, Bill's rights (or the absence thereof) in the *Alpha Token* have no bearing on Bill's rights as a protected purchaser of the *Alpha Shares*.[83] There are at least three reasons supporting this conclusion:

- First, under Alpha's system for registered ownership of the Alpha Shares, the transfer of control of the Alpha Token to Bill and Bill's acquisition of registered ownership of the relevant Alpha Shares confers no interest (and Bill does not otherwise have any interest) in the Alpha Token, which is a part of Alpha's registration system.

- Second, even if Bill had an interest in the Alpha Token and were a purchaser of the Alpha Token,[84] whether Bill's purchaser status relating to the Alpha Token would affect Bill's rights in the Alpha Shares themselves is a matter governed by other, non-UCC Article 12 law, even if the 2022 Amendments apply.[85] In this case the "other law" is Article 8, under which (as explained above) Bill is a protected purchaser of the Alpha Shares who took free of any adverse claims to the Alpha Shares. Moreover, this analysis is consistent with the treatment under Articles 9 and 12 for controllable electronic records evidencing controllable accounts or controllable payment intangibles, as to which it is the transfer of *control* of the controllable electronic record (not a transfer of an *interest in* the controllable electronic record) that confers control of those rights to payment.[86] A qualifying purchaser of and a secured party with a perfected security interest in those rights to payment need not have any interest, much less a priority interest, in the related controllable electronic record.[87]

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[82] *See* U.C.C. § 8-102, cmt. 18, Examples 1 and 2.

[83] U.C.C. § 12-104(a).

[84] For example, for some purposes and in some contexts, a right to use (such as Bill's right to use the Alpha Token) may be considered a property interest.

[85] U.C.C. Article 12, Prefatory Note 4.a. (Article 12 leaves to other law whether acquisition of rights in a controllable electronic record gives rights in other property or whether such right would benefit from a take free rule). *See also* note 56 and accompanying text.

[86] U.C.C. §§ 9-107A(b); 9-314(a); 12-104(a), (c) & (f).

[87] *See* U.C.C. §§ 9-202, cmt. 2; 12-102, cmt. 3 ("[A] purchaser of a controllable account or a controllable payment intangible may be a qualifying purchaser even if the purchaser does not also purchase the controllable electronic record that evidences the account or payment intangible."); 12-104, cmt. 6:

> [C]ontrol of the controllable account or payment intangible is achieved only by obtaining control of the controllable electronic record that evidences the account or payment intangible. . . . [A] purchaser may obtain a property interest in the controllable account or controllable payment intangible even if it does not acquire any interest in the controllable electronic record that evidences the account or payment intangible. . .

- Third, if the 2022 Amendments (including Article 12) are not in effect, to the extent that the "other law" consists of the applicable principles of common law and equity, those principles would not impair Bill's rights as a protected purchaser under Article 8.[88]

Interplay with Article 8's indirect-holding system

This part of the report considers the situation if Bill wants to hold the Alpha Shares through a bank, broker, or other "securities intermediary"[89] (as previously defined, "Intermediary") rather than holding the Alpha Shares directly as a registered owner. In doing so, this report assumes that the substantive law rules of Article 8 apply after giving effect to the choice-of-law rules in Article 8 and, if applicable, the Hague Securities Convention.[90]

Bill arranges for the Alpha Shares to be registered in the name of Beta Brokerage Co. ("Beta," an Intermediary) for credit to Bill's "securities account"[91] at Beta. (Alternatively, the Alpha Shares might have been registered in the name of an "upstream" Intermediary designated by Beta with which Beta has a securities account.) Although Bill prefers to hold Alpha Shares through Beta, the various aspects of the direct holding of registered ownership of the Alpha Shares discussed in this report remain relevant and central. Accordingly, Bill transfers control of the Alpha Token (as an Instruction Token) to Beta's electronic wallet associated with the Alpha platform, which constitutes an instruction to Alpha to register the Alpha Shares in Beta's name on Alpha's books and records. Beta becomes the registered owner of the Alpha Shares through the same process as took place when Bill bought the Alpha Shares directly from Sally. The Alpha Shares are "financial assets" under Article 8.[92] When Beta credits the Alpha Shares to Bill's securities account, Bill will have a "security entitlement" with respect to the Alpha Shares.[93] Beta will be able to comply with any later "entitlement orders"[94] from Bill to sell the Alpha Shares or other directions from Bill.[95]

. [M]erely obtaining control of a controllable electronic record does not result in the acquisition of an interest in the record.

[88] *See* U.C.C. § 1-103(b) ("Unless displaced by the particular provisions of [the Uniform Commercial Code], the principles of law and equity [ ] supplement its provisions.").

[89] *See* U.C.C. § 8-102(a)(14) (defining "securities intermediary").

[90] The Convention of 5 July 2006 on the Law Applicable to Certain Rights in Respect of Securities held with an Intermediary, available at https://www.hcch.net/en/instruments/conventions/full-text/?cid=72.

[91] See U.C.C. § 8-501(a) (defining "securities account").

[92] See U.C.C. § 8-102(a)(9) (defining "financial asset"). A "security" is always a financial asset under clause (i) of that definition.

[93] See U.C.C. §§ 8-102(a)(17) (defining "security entitlement") and 8-501(b)(1) (providing for a security entitlement to arise when a security or other financial asset is credited to a securities account).

[94] An entitlement order is a direction from the entitlement holder to the securities intermediary to transfer or redeem a financial asset. U.C.C. § 8-102(a)(8) (defining "entitlement order").

[95] A securities intermediary has a duty to comply with any such entitlement orders or directions. U.C.C. §§ 8-506; 8-507; 8-508.

Case Study 2 – Security Interest in the Alpha Shares to Secure an Obligation

Case study details

Case Study 2 has the same facts as Case Study 1, except that, instead of seeking to own the Alpha Shares, Bill is extending credit to Sally. Bill wants to obtain a security interest in the Alpha Shares associated with the Alpha Token to secure Sally's obligation to repay the credit being extended. Bill and Sally enter into a security agreement under which Sally grants to Bill a security interest in the Alpha Shares to secure Sally's credit obligations to Bill.

In connection with the execution of the security agreement and to provide Bill with control of the Alpha Shares, and accordingly the benefits of perfection and priority of his security interest through control, as discussed below, Sally would transfer control of the Alpha Token (as a Control Agreement Token) from Sally's electronic wallet to Bill's electronic wallet associated with the platform. Sally's transfer of control of the Alpha Token would result in Alpha's agreement with Sally and Bill that Alpha will comply with instructions concerning the Alpha Shares originated by Bill without further consent of Sally.[96] As a consequence of Bill obtaining control of the Alpha Shares, if Bill otherwise qualifies, Bill can become a protected purchaser of the Alpha Shares.[97] Because of Bill's control of the Alpha Shares, Bill has the ability to give a subsequent instruction to Alpha to re-register the Alpha Shares associated with the Alpha Token into Bill's name or into the name of any other person as registered owner.[98] As provided in Alpha's organic documents, only the person in control of the Alpha Token—here, Bill—can give an instruction to transfer registered ownership of the Alpha Shares associated with the Alpha Token. As is common, Bill agrees with Sally in the security agreement that Bill will not use the Alpha Token to give any subsequent instruction to Alpha to transfer registration of the Alpha Shares unless Sally is in default under Sally's secured credit arrangements.

Attachment of the security interest

We assume that Bill's security interest in the Alpha Shares has attached*,* i.e., that (a) value has been given by Bill's extension of credit to Sally (or otherwise), (b) Sally has rights in or the

[96] *See* notes 50-52 and accompanying text (discussing establishment and use of Control Agreement Tokens). This is the approach discussed in Case Study 1 for the use of a control agreement as a means of eliminating the gap period where Bill was a buyer of the Alpha Shares from Sally. *See* Case Study 1 – Sale, Case study details, Mitigating Bill's priority risk, above.

[97] As explained in connection with Case Study 1, Sally could have transferred to Bill the Alpha Token that would provide an instruction to Alpha, resulting in Bill becoming the registered owner of the Alpha Shares. That would constitute a delivery of the Alpha Shares to Bill and also result in Bill having control of the Alpha Shares. However, that approach would introduce complications relating to, for example, shareholder voting by Sally and Sally's receipt of distributions on account of the Alpha Shares. For these (and other) reasons it is not typical for a secured party to become a registered owner of securities that are collateral.

[98] Bill could do so by transferring control of the Alpha Token (as an Instruction Token) to the electronic wallet of a transferee that would become the registered owner. If Bill wished to become the registered owner of the Alpha Shares himself, Alpha's system should provide another mechanism for a person in control of the Alpha Shares pursuant to a control agreement to become the registered owner. For example, Bill might be required to transfer control of the Alpha Token to Alpha, which would result in the transfer of control of a new Alpha Token to Bill's electronic wallet.

power to transfer rights in the Alpha Shares, (c) the security agreement reasonably describes the Alpha Shares, and (d) the security agreement has been signed by Sally.[99]

Perfection of security interest

Bill's security interest in the Alpha Shares is perfected by control, because Sally's transfer of the Alpha Token as a Control Agreement Token creates a control agreement with Alpha, resulting in Bill having control of the Alpha Shares.[100] Alternatively (or additionally), Bill could have perfected the security interest in the Alpha Shares by the filing of a financing statement against Sally or by receiving delivery of the Alpha Shares.[101]

Priority of security interest

Because Bill's security interest in the Alpha Shares has been perfected by control, the security interest is senior to any competing security interest not perfected by control, such as by the filing of a financing statement, even if Bill obtained control later in time.[102] Bill may also qualify as a protected purchaser of the Alpha Shares, who would take free of any existing security interest to the extent of Bill's security interest, under the analysis provided in Case Study 1.[103]

Security interest in the Alpha Token to secure an obligation

Assume that Sally had rights in or the power to transfer rights in the Alpha Token[104] and that Sally had granted to her lender a security interest in the Alpha Token (not the Alpha Shares), for example, by granting a security interest in Sally's general intangibles. If Bill did not acquire the Alpha Token free of conflicting claims[105] (or even if Bill had no interest at all in the Alpha Token, as would be likely), Bill's right to the Alpha Shares would not be impaired. Moreover, even if the lender had superior rights to the Alpha Token, the lender would have no basis to obtain control of the Alpha Token, because it has no rights in the Alpha Shares or any rights to the Alpha Shares would have been cut off.

Bill may believe that there is some benefit from obtaining a security interest in the Alpha Token that serves a crucial functional role in providing perfection and priority of Bill's security

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[99] *See generally* U.C.C. § 9-203. Assuming Sally had agreed to create a security interest in the Alpha Shares in Bill's favor as secured party, Bill's control of the Alpha Shares (discussed next) would suffice for attachment even in the absence of a signed security agreement describing the Alpha Shares. See U.C.C. §§ 9-203(b)(3)(D); 9-106(a).

[100] The Alpha Shares are "investment property" as defined in Section 9-102(a)(49). A security interest in investment property constituting uncertificated securities may be perfected by control. U.C.C. §§ 8-106(c)(2); 9-106(a); and 9-314(a).

[101] A security interest in investment property may be perfected by the filing of a financing statement. U.C.C. § 9-312(a).

[102] U.C.C. § 9-328(1), (2).

[103] U.C.C. §§ 8-303(a); 9-331.

[104] U.C.C. § 9-203(b)(2).

[105] This would be the case, for example, if Article 12 were not in effect so that Bill could not be a qualifying purchaser of the Alpha Token.

interest in the Alpha Shares and also in the delivery of the Alpha Shares to Bill, which made it possible for Bill to become a protected purchaser of the Alpha Shares. However, as explained in Case Study 1, Bill's rights (or the absence thereof) in the *Alpha Token* have no bearing on Bill's rights in the *Alpha Shares* and this is regardless of whether the 2022 Amendments are in effect.[106]

Unauthorized Transfer of the Alpha Token

Assume that Fraudster hacked into Sally's electronic wallet associated with the platform, transferred control of the Alpha Token to Bill's electronic wallet, with Bill not having notice of the fraud or any other adverse claim. Bill transferred funds (e.g., transferred control of stablecoins) to Sally's electronic wallet in payment against the transfer of control of the Alpha Token to Bill's electronic wallet, and Fraudster then transferred control of the funds from Sally's electronic wallet to an electronic wallet controlled by Fraudster or unknown persons. Alternatively, assume that Fraudster hacked into Sally's electronic wallet and transferred control of the Alpha Token to Fraudster's electronic wallet. This assumes further that Fraudster was a permitted (i.e., "whitelisted") registered owner on Alpha's platform.[107] Fraudster then transferred control of the Alpha Token to Bill's electronic wallet. If Fraudster were not a permitted registered owner, Fraudster's attempt to transfer the Alpha Token to Fraudster's electronic wallet would have failed.

If Sally discovered the fraud before Alpha transferred registered ownership of the Alpha Shares to Bill, Sally could demand that Alpha not register transfer of the Alpha Shares to Bill and put Bill on notice of her adverse claim.[108] But if Bill first became the registered owner and qualified as a protected purchaser, Bill would have taken free of Sally's adverse claim to the Alpha Shares. Because, under the terms of the Alpha Shares and Alpha's organic documents, transfer of control of the Alpha Token is an effective instruction, Alpha would not be liable to Sally based on a wrongful registration.[109]

This is only one example of potential risks that could arise out of the tokenization of instructions and issuer control agreements in connection with the direct holding of uncertificated securities. Persons dealing with these securities and the associated tokens must take account of these and other risks. These risks are not explored in any detail in this report and in general are

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[106] *See* Case Study 1 – Sale, Case study details, Rights of protected purchaser not dependent on 2022 Amendments, above. Perhaps there is "no harm" in Bill obtaining a security interest in the Alpha Token (if Sally has the right or power to transfer rights in the Alpha Token) when the 2022 Amendments are in effect. But when the 2022 Amendments do not apply, it may be awkward and problematic to explain to a court that as a matter of law Bill's obtaining a subordinate security interest in the Alpha Token was a meaningless act in relation to Bill's rights in the Alpha Shares.

[107] Although this assumption might seem highly unlikely, due to Fraudster's fraud and a failure of Alpha's "know your customer" and other precautions, Fraudster's actual identity might have been unknown to Alpha. The risk for issuers of fraudulent instructions is not new. But the manifestation of these risks may differ as a result of the use of tokens as contemplated by this report.

[108] U.C.C. § 8-403.

[109] *See* U.C.C. § 8-404(a).

beyond its scope. However, this report recognizes that the necessary safeguards appropriate to mitigate such risks would be an extremely important aspect of an issuer's tokenization structure.

Amendment to Official Comment to Section 8-102

Official Comment 18 to Section 8-102 is amended to add the following new sentence immediately following the first sentence of the grammatical paragraph that precedes "Example 1":

> For additional guidance and further discussion of the potential role of a controllable electronic record in transactions relating to Article 8 uncertificated securities, including the presentation of an instruction and establishment of a control agreement, see PEB Report on the "Tokenization" of Securities Transfers Under the Uniform Commercial Code, dated August 10, 2026. The Report is available at https://www.ali.org/peb-ucc.

Conclusion

The existing commercial law rules of the UCC provide for the issuance and transfer of registration of securities that are not evidenced by a tangible security certificate. The legal framework in Article 8 for these uncertificated securities supports the use of digital tokens as instructions to transfer registered ownership if the tokenization is permitted and is otherwise effective under other law. In many respects, the tokenization of the transfer of the securities can provide the functional equivalent of the tokenization of the securities themselves. These commercial law rules of the UCC should be considered, together with other laws, rules, regulations, and procedures, as parties seek to tokenize the transfer of securities.