

Navigating Bankruptcy in Digital Asset Markets: Digital Asset Intermediaries and Customer Asset Protection

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EXECUTIVE SUMMARY

The implosion in 2022 of FTX and the cascade of defaults and insolvencies precipitated by its collapse underscores the centrality of enforceable property rights as a fundamental principle of customer asset protection, particularly in bankruptcy scenarios.

This whitepaper – the second of two papers covering digital assets¹ – examines how digital assets may be held by customers through intermediaries and considers how those assets can be protected following an insolvency of the intermediary, with a specific focus on English and US law. While digital assets raise some novel questions, the key finding is that traditional and fundamental protections of clear legal terms and segregation of assets can be adapted to the world of digital assets.

The primary recommendation of this paper is that rules governing the ownership of customer digital assets following insolvency of an intermediary should be made as clear as possible. Achieving greater clarity in the application of these rules – including the contractual and operational frameworks designed to implement them – will ensure that customers are given equivalent rights and protections to what they would expect for traditional assets (such as securities) or financial products (such as derivatives).

While sophisticated market participants – including those in the privately negotiated derivatives market – may decide to accept a lower level of protection², they should always be clear on how their assets will be treated in insolvency.

These protections rely on the existence of unambiguous and enforceable property rights, providing customers with the ability to confidently assert claims over their assets, for those claims to be protected and enforced under applicable law, and for assets to be predictably allocated and distributed following insolvency. These rights are core tenets of the global financial system and central to the risk mitigation techniques and practices promoted by ISDA as part of its mission to foster safe and efficient derivatives markets.

Fortunately, various jurisdictions, including the US³ and England and Wales⁴, have recognized digital assets as capable of being the subject of property rights.

On the specific issue of customer protection, this paper finds that:

- From both an English and US law perspective, existing private law concepts (such as trusts) can be applied to digital assets to protect customer assets following insolvency;
- Both English and US law requires regulated digital asset intermediaries to adhere to rules governing custodial arrangements and protection of customer assets, including in relation to the segregation and bankruptcy remoteness of customer assets; and

¹ See ISDA, *Navigating Bankruptcy in Digital Asset Markets: Netting and Collateral Enforceability*, www.isda.org/2023/01/26/navigating-bankruptcy-in-digital-asset-markets-netting-and-collateral-enforceability/

² Investors may agree to lower levels of customer asset protection when, for example, they use an intermediary to enter into lending arrangements for their assets or to obtain more favorable commercial terms. In these circumstances, it will be important that all parties are aware of the levels of asset protection provided and the scenarios in which the customer's assets may be at risk

³ See Uniform Commercial Code (UCC), 2022 Amendments, www.uniformlaws.org/committees/community-home?CommunityKey=1457c422-ddb7-40b0-8c76-39a1991651ac

⁴ See UK Jurisdictional Taskforce, *Legal Statement on Cryptoassets and Smart Contracts*, November 2019, <https://technation.io/lawtechukpanel/>

- Existing insolvency regimes in both the UK and US will apply to digital asset intermediaries, although the specific regime will depend on the nature of their legal and regulatory structure.

The analysis demonstrates the importance of ensuring that the precise nature of any custodial relationship is well understood. As such, this whitepaper identifies questions that investors should ask to determine the level of protection they have. It also provides direction for digital asset intermediaries to promote clear standards to give customers the best possible protection in insolvency proceedings.

Parties should consider the following key issues when entering these arrangements:

- Based on the customer's intended trading or investment activity, what level of customer asset protection is necessary or commercially desirable?
- Which jurisdiction's law would govern the insolvency of the intermediary and how does it recognize rights in digital assets and customer assets?
- What are the rights granted under the prospective contractual arrangement between the customer and intermediary?
- Does the intermediary have a specific contractual or regulatory obligation to segregate customer assets from its own assets?
- What is the operational approach taken by the intermediary to record and segregate assets, and what security mechanisms does it have in place to protect their operation?

Although traditional financial market principles will generally apply to digital asset intermediaries, this paper acknowledges that distributed ledger technology (DLT) or similar technology may present some novel legal and practical questions compared to traditional financial assets.

For example, control of an intermediary's private keys for customer assets held on chain will likely have special relevance in an insolvency scenario, resulting in an operational issue that does not have a ready analogy in traditional finance. This is relevant both for ensuring that an insolvency administrator can gain swift access to assets held for customers and to reduce the risk of losses due to hacking. Intermediaries and customers should ensure at the outset of the relationship that these operational issues are identified and managed.

While not directly an intermediary issue, a customer choosing to gain exposure to a digital asset through an intermediary may also be subject to legal uncertainties relating to the asset itself. In the cross-border world of DLT, there are two key questions: which governing law applies to the digital asset; and how can a proprietary claim to the asset be enforced in the relevant jurisdiction.

These questions have been analyzed in previous whitepapers published by ISDA⁵, which found that issues could arise when using decentralized, permissionless blockchains that do not have any identifiable legal entity that could be the subject of a claim relating to a disputed on-chain asset. In these scenarios, it may not be clear which governing law applies to the platform or which court(s) may have jurisdiction to resolve disputes or enforce these claims.

⁵ See ISDA, *Private International Law Aspects of Smart Derivatives Contracts Utilizing DLT*, www.isda.org/a/4RJTE/Private-International-Law-Aspects-of-Smart-Derivatives-Contracts-Utilizing-DLT.pdf

Resolving these questions may require new conventions for resolving conflict-of-laws issues. ISDA encourages national authorities to ensure clear legal frameworks are in place for defining the property status of digital assets and supports the ongoing work and consultations administered by national authorities like the UK Law Commission⁶ and international organizations, such as the International Institute for the Unification of Private Law (UNIDROIT)⁷.

Regardless of how these important legal questions are ultimately resolved, the asset holding structures and practical steps described in this paper are likely to continue to be necessary to protect customers from the consequences of a digital asset intermediary insolvency. ISDA encourages digital asset intermediaries, customers and regulators to review current practices and address any identified gaps to reduce the likelihood of a future collapse causing significant harm to market participants.

⁶ www.lawcom.gov.uk/project/digital-assets-which-law-which-court/

⁷ www.unidroit.org/work-in-progress/digital-assets-and-private-law/

INTRODUCTION

The swift succession of insolvencies in the digital asset market in the second half of 2022, including the estimated potential loss of over \$8 billion in customer assets following the collapse of FTX⁸ and other high-profile digital asset exchanges and platforms⁹, has highlighted the need for clarity in the assessment of insolvency-related exposures to intermediaries in the digital asset market (such as digital asset exchanges, custodians or other third parties, referred to as digital asset intermediaries). These insolvencies also had a very significant impact on non-derivatives market participants, including retail investors, and have re-energized efforts by regulators to implement appropriate regulatory frameworks and customer protection regimes and provide greater certainty over the property law treatment of digital assets.

Derivatives market participants may hold digital assets with a digital asset intermediary for several reasons – for example, in connection with trading activity, to facilitate collateral arrangements or simply for administrative convenience. Generally speaking, derivatives market participants are highly sophisticated entities that can determine the level of risk they are comfortable taking and manage their relationships accordingly. However, it is vital that derivatives market participants have a clear understanding of the circumstances in which they may face insolvency exposures to digital asset intermediaries to do this effectively. This requires an understanding of the legal rights and obligations that result from their relationships with intermediaries for digital asset holdings.

This is the second of two whitepapers published by ISDA that explore the key legal questions arising from the insolvency of FTX and its related entities and their application to the emerging digital asset derivatives market. ISDA's intention is to support derivatives market participants by providing clarity on the legal and property characterization issues that exist for this asset class.

The first paper, *Navigating Bankruptcy in Digital Asset Markets: Netting and Collateral Enforceability* (published in January 2023), focuses on the enforceability of close-out netting and collateral arrangements for derivatives referencing digital assets and identifies several areas of focus for policymakers and market participants to ensure greater certainty. This includes the use of standardized contractual frameworks like the ISDA Digital Asset Derivatives Definitions and further legal clarity from national authorities on the property status of digital assets.

The purpose of this paper is to identify the key legal issues relevant to determining the nature of a customer's exposure to a digital asset intermediary that holds digital assets for or on behalf of that customer. The intention is to help derivatives market participants understand the drivers of insolvency exposures to these intermediaries in relation to customer digital asset holdings.

The risks outlined in this paper are not necessarily unique to the custody of digital assets, but it highlights incremental risks that apply in the context of digital asset custody versus traditional financial instruments. For that reason, its focus is limited to digital assets that give rise to novel issues in the manner they are custodied. That includes cryptocurrencies (such as Bitcoin and Ether) but extends to other forms of digital assets, such as tokenized instruments or those representing an underlying physical asset. Where use of a private key is the only means of achieving a transfer of digital assets, control of the private key is necessary to ensure proper management and safeguarding of the custodied asset. This is a novel feature of digital assets.

⁸ www.theguardian.com/business/2023/jan/11/ftx-fraud-value-crypto-sbf/

⁹ For example, see:

- www.reuters.com/technology/crypto-broker-voyager-digital-issues-default-notice-three-arrows-capital-2022-06-27/
- www.reuters.com/technology/crypto-lender-celsius-files-bankruptcy-2022-07-14/
- www.reuters.com/technology/crypto-broker-genesis-suspend-redemptions-new-loan-originations-tweet-2022-11-16/
- www.reuters.com/technology/blockfi-makes-first-appearance-bankruptcy-court-2022-11-29/

It is important to note that cryptocurrencies are only one example in a broader class of digital assets. While the crypto-asset markets are experiencing profound issues, the underlying technology is being applied to other forms of digital assets, including digitized forms of equity or debt instruments, which have very different economic characteristics and risk profiles. Indeed, within the broader category of digital assets, there are many applications that could fundamentally enhance the operation of global financial markets.

As well as identifying the relevant risks for market participants, the ISDA whitepapers are relevant to service and infrastructure providers, particularly those that are actively involved in the transfer and intermediated holding of digital assets and want to restore confidence in the integrity and robustness of this market. The analysis will also be of interest to international legal standard setters, legislative bodies and regulatory authorities that are developing global and national rules that will ultimately underpin the use of digital assets within global financial markets¹⁰.

This whitepaper examines specific issues relating to the insolvency of digital asset intermediaries from both a New York and English law perspective. While similar principles and considerations may apply elsewhere, market participants should perform their own due diligence to understand the legal and regulatory treatment in their own jurisdictions.

The issues outlined in this paper are also specific to digital assets and custody arrangements for these assets. The rapidly evolving landscape of digital assets and related technologies may impact the validity of the legal and regulatory analysis over time, so firms should consult with their own legal and regulatory advisers before making any decisions or taking any actions based on the information in this paper.

¹⁰ Both this paper and the previous whitepaper (*Navigating Bankruptcy in Digital Asset Markets: Netting and Collateral Enforceability*) focus on digital assets that utilize distributed ledger technology (DLT) and are likely to be used within the derivatives market. The issues raised will be most relevant to digital assets recorded on public DLT platforms that have a high degree of decentralization (eg, the Bitcoin blockchain) and where the creation and transfer of and dealing in the underlying digital asset is not reliant on any centralized entity. Further details on the technological powers and legal rights vested in the holders of digital assets are set out in the previous whitepaper

PROTECTION OF DIGITAL ASSETS IN CUSTODY

The analysis in this whitepaper demonstrates the importance of ensuring that the precise nature of any custodial relationship is well understood. This section provides an overview of how custody works for traditional assets and considers how these arrangements can be adapted to digital assets and digital asset intermediaries.

Traditional Custody vs. Digital Asset Custody

The term ‘custody’ is generally used to describe the service of keeping assets safe by a person (the custodian) for or on behalf of another (the customer). Custody may be provided for various types of assets, both physical (such as commodities) and intangible (including certain financial assets). The custodian may also perform administrative tasks relating to the asset on behalf of customers. These may include exercising rights attached to the asset on behalf of the customer (such as voting rights in the case of financial instruments).

Custody may involve safekeeping of specific physical assets, such as bearer securities or commodities like precious metals. In these cases, the asset is capable of being physically segregated from other assets (for example, in a safety deposit box or identifiable and labelled units or lots) so it is specifically identified as belonging to the customer.

For intangible assets like dematerialized securities, the custodian maintains accounts and records showing the quantity of the asset held by each customer. It also holds that asset in a manner that is clearly identified as held for one or more customers and in an amount at least equal to what is shown in the customer accounts. How the asset is identified as being held for customers depends on the asset. In the case of dematerialized securities, the custodian’s holdings of customer assets and its own proprietary securities can be segregated by holding them in separate accounts maintained with a sub-custodian, central securities depository or other intermediary.

Custody in this sense may refer to various different types of legal relationships between a custodian and its customer. Depending on the legal regime, a custody relationship may involve a trust, a bailment (if involving physical assets like commodities) or specific statutory protections or regimes. The relationship may depend on a variety of factors, including the nature of the assets, the law(s) governing the relationship, the location or deemed location of the assets, the existence of statutory protections or safe harbors, and the respective rights and responsibilities agreed between the custodian and customer. That relationship is generally documented under standard terms prescribed by the custodian¹¹, the content of which may be partly determined by regulatory requirements.

In many ways, custody services provided by digital asset intermediaries are comparable to those provided for other assets¹². However, the holder of a digital asset is broadly the person lawfully in control of the private key¹³. This creates various operational issues that do not have a ready analogy in traditional finance.

¹¹ In the absence of clear terms, UK law may, in certain cases, imply what is, in effect, a custodial relationship into dealings that involve the safekeeping of assets. Under US law, a general deposit does not create a custodial relationship but a debtor-creditor one, and only in specific circumstances will courts hold a custodial relationship is established

¹² This paper assumes that digital assets may be the object of property rights in any relevant jurisdiction and the analysis is qualified accordingly. In most common law jurisdictions, there is some authority to the effect that digital assets are capable of being the subject of property rights, including a number of preliminary judgments. See, for example: *AA v Persons Unknown* [2019] EWHC 3556 (Comm), [2020] 4 WLR 35; *Ion Sciences v Persons Unknown and Others* (unreported) December 21, 2020 (Commercial Court); *Marian Toma, David True v Ciaran Murray* [2020] EWHC 2295 (Ch); *DPP v Briedis* [2021] EWHC 3155 (Admin); *Danisz v Persons Unknown* [2022] EWHC 280 (QB); *Tulip Trading Ltd v Bitcoin Association for BSV* [2022] EWHC 667 (Ch) (Judgment date: March 25, 2022); *HDR Global Trading Ltd v Shulev* [2022] EWHC 1685 (Comm); *Nicholls v Little* [2022] EWHC 2344 (QB); *D’Aloia v Person Unknown & Others* [2022] EWHC 1723 (Ch); *Ruscoe v Cryptopia* [2020] NZHC 728, [2020] 22 ITELR 925 (New Zealand High Court); and *Quoine pte v B2C2* [2020] SGCA(I) 02 (Singapore Court of Appeal)

For security purposes, digital asset custodians will invariably generate fresh public-private key pairs (or wallets) for the digital assets they accept in custody (as opposed to accepting a private key generated by another person, such as the customer)¹⁴. This enables the digital asset intermediary to ensure it has control over the security processes relating to the private key. This is central to ensuring the safe keeping of digital assets by the digital asset intermediary, as the holding of the private key equates to control of the relevant digital assets¹⁵.

Custodial or Title Transfer Arrangements

A common feature of different custodial arrangements is that the customer is generally not exposed to the risk of losing its custodied assets following the insolvency of the custodian. If the custodian becomes insolvent, the customer has a proprietary entitlement or other statutory protection or preference to specific assets held by the custodian. For that reason, the custodian's general creditors do not have recourse to custodied assets following an insolvency of the custodian.

This is in contrast to title transfer (or debtor-creditor) arrangements, where assets are transferred to an intermediary against a contractual obligation to return equivalent assets. In this case, the asset of the customer is the intermediary's obligation to redeliver equivalent assets rather than a proprietary entitlement or other statutory protection or preference to a specific asset.

In determining whether a particular relationship (including between a customer and digital asset intermediary) is categorized as a custodial or title transfer relationship, courts will generally consider a number of factors. While these vary across jurisdictions, they commonly include:

- The terms of the arrangement between the two parties and whether they expressly (or implicitly) state that the customer has a proprietary entitlement to assets held by the intermediary or a contractual entitlement to return equivalent assets¹⁶;
- Segregation and re-use requirements – specifically, whether the intermediary has a contractual or regulatory obligation to record customer assets as segregated and distinguishable from its own, with a prohibition on re-use; and

¹³ Digital assets are recorded on a DLT ledger to an address that is typically a hash of a public key. That public key is cryptographically derived from a specific private key. That private key is similar to a personal identification number (PIN) as it is required to sign or authenticate any on-chain transfer of digital assets recorded to the corresponding public key address

¹⁴ Storage solutions can be broadly categorized as either 'hot', 'cold' or 'warm'. Hot storage involves saving private key data in an online environment. The main advantage of this approach is convenience and liquidity, as the private key can be more easily deployed to sign or authenticate on-chain transactions. In contrast, cold storage involves maintaining private key data offline – ie, a hard copy record of the private key is created or saved onto a hard drive that is physically segregated from and incapable of being connected with other computers or network devices. Warm storage offers a compromise between the ease-of-access of hot storage and the security of cold storage. In this arrangement, private key data is held online and transactions can be created automatically. However, stronger access controls mean that human involvement (typically via the entry of a PIN or passcode) is required to deploy the private key and authenticate a transaction. In practice, digital asset intermediaries may use a combination of these storage methods, maintaining sufficient liquidity in hot or warm storage to meet customer trading demands while holding the majority of customer funds in highly secure cold (offline) environments. Digital asset intermediaries may also add additional layers of security via key sharding or the use of multi-signatory systems, which distribute responsibility for authorizing transactions across multiple entities or devices

¹⁵ The absence of specific regulatory requirements for digital assets and a lack of clarity on the legal characterization of digital assets in some jurisdictions has created a greater scope for variety in the range of digital asset storage solutions. While this paper focuses on third-party custodial arrangements, there are a number of self-custodial storage solutions available in the market. These range from purpose-built hardware wallets to multi-sig wallets where the customer exclusively retains the ability to effect on-chain transfers (despite third-party software facilitating the assemblage of the private key). These arrangements would not give rise to the insolvency exposures that are the subject of this paper, because the customer's interest is direct, rather than solely via an intermediary

¹⁶ The categorization of legal rights in digital assets is considered in the Overview of Key Insolvency Exposures section

- The manner in which the relevant intermediary is remunerated for its services – namely, whether the intermediary receives a fee for its services or is otherwise compensated by the income or rewards generated by the assets under its control and the intermediary is compensating the customer in any way (eg, paying the customer interest).

Omnibus and Individual Customer Segregation

Custody arrangements over fungible assets like dematerialized securities and certain digital assets can broadly be categorized as either individually segregated or omnibus.

In an individually segregated structure, the customer assets are identifiable as belonging to the specific individual customer and segregated from both the custodian's own assets and all assets the custodian holds for other customers. The custodian maintains separate records for each customer and ensures the customer's assets are operationally separate from other assets.

In an omnibus structure, the custodian holds a quantity of assets identifiable as belonging to customers generally (or some class thereof), such as a single securities account with a sub-custodian or central securities depository. The custodian must ensure there are sufficient assets in the omnibus account to cover all the amounts it shows in its books and records as being held for customers. The custodian segregates those assets from its own assets.

Digital asset intermediaries will likely have similar operational arrangements, although digital assets will be held in a wallet rather than a traditional account. There is a distinction between the wallet under the control of the digital asset intermediary and any digital asset balance credited to an account maintained by that intermediary in the name of one or more customers. As described for the custody of intangible assets, a custodian will maintain accounts for customers in its books and records, but those assets could ultimately be held on an individual segregation or omnibus basis. Similarly, a digital asset intermediary may offer segregation at an account level, a wallet level or both. For example, a digital asset intermediary may:

- Segregate customer entitlements within its own books and records from its own assets, but fail to segregate the digital assets relating to customer activity from its own digital assets by co-mingling these in a single underlying wallet (no segregation);
- Segregate customer entitlements from its own assets within both its own books and records and the underlying wallet, but nevertheless operate one or more wallets that it identifies as holding customer assets (but without identifying any particular wallet as pertaining to a particular client). Under this arrangement, the customer wallet(s) would be separate from any of the digital asset intermediary's proprietary wallets and would hold enough of the digital asset to cover the amounts shown in the customer accounts it maintains in its books and records (omnibus segregation); and/or
- At all times operate one or more underlying wallets identified as being held for an individual customer account recorded in its books and records (individual segregation).

While the omnibus model offers various operational efficiencies and generally lower costs, the comingling of assets can create delays in the identification and recovery of customer assets in an insolvency scenario, particularly when the total of all customer claims exceeds the amount of assets available for distribution.

Regulatory Considerations

A custody arrangement is not equivalent to an outright guarantee that the customer's assets will be protected in all circumstances. There may be situations in which the customer is exposed to the risk of loss of some or all of the value of its assets, notwithstanding the custodial relationship. Examples include fraud and wrongful or negligent dissipation of the customer's assets. The customer may not be able to recoup its entire loss from the custodian, even in circumstances in which it is entitled to (and it may not always be entitled to).

For this reason, the custodian may be subject to regulatory requirements that seek to minimize or mitigate these (and other) risks. In the context of financial services, custodians of financial instruments are generally subject to onerous and extensive regulatory requirements.

At a general level, regulatory regimes typically impose obligations on regulated custodians intended to protect customer assets or otherwise ensure assets will be available following insolvency of the custodian to satisfy customer claims in full. These requirements may include:

- Properly recording customer assets as segregated and distinguishable from the custodian's own assets;
- Ensuring the custodian is not using or entitled to use customer assets as the custodian's own assets;
- Having appropriate systems and controls in place to safeguard customer assets;
- Carrying out regular reconciliations;
- Documenting the relationship with the customer;
- Providing regular reports to the regulator; and
- Providing regular reports to the customer.

UK Regulatory Considerations

In the UK, the safeguarding and administration of certain specified investments¹⁷ is a regulated activity under the Financial Services and Markets Act 2000. Entities that are engaged in these activities in the UK are required to be authorized and subject to specific requirements in accordance with the Financial Conduct Authority's (FCA) client asset rules for custody. Among other things, an entity that provides custodial services for certain specified investments is required to record client assets as distinguishable from its own assets, have appropriate systems and controls in place to safeguard client assets, carry out regular reconciliations, and provide regular reports to the FCA.

¹⁷ This would include digital assets that are security tokens

US Regulatory Considerations ¹⁸	
Federal bank regulation	In the US, national banks chartered by the Office of the Comptroller of the Currency may provide custody services, including the settlement, safeguarding and reporting of customers' marketable securities and cash. Custodial banks must maintain the safety of custody assets. The custodian's policies, procedures, records and internal controls must ensure that assets of custody accounts are kept separate from the assets of the custodian. Additionally, as custody services are contractual in nature, the custody bank must comply with the terms of all relevant agreements.
New York state regulation	<p>Under New York's virtual currency regulation, 23 NYCRR Part 200.3(a), no person may conduct virtual currency business activities¹⁹ without a license (known as a BitLicense) from the Superintendent of the New York State Department of Financial Services (NYDFS). New York's virtual currency BitLicense regulations exempt from licensing (and therefore other) requirements under the regulation "[entities] that are chartered under the New York Banking Law (the NYBL) and are approved by the Superintendent of the NYDFS to engage in virtual currency business activity", among other persons.²⁰</p> <p>New York's virtual currency regulation, 23 NYCRR Part 200, requires BitLicensees to: hold virtual currency in a manner that protects customer assets; maintain comprehensive books and records; properly disclose the material terms and conditions associated with their products and services, including custody services; and refrain from making any false, misleading or deceptive representations or omissions in their marketing materials, among other things.</p> <p>On January 23, 2023, the NYDFS issued an industry letter²¹ providing guidance to entities licensed under 23 NYCRR Part 200 or chartered as limited purpose trust companies under the NYBL that custody virtual currency assets to emphasize sound custody and disclosure practices to better protect customers in the event of an insolvency or similar proceeding.</p>

¹⁸ This is not an exhaustive list of US regulatory issues on this topic. US market participants will need to determine if there are any other relevant federal and/or state rules and regulations. For example, certain rules and regulations of both/either the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission may be relevant. This is a complex and evolving area. On February 15, 2023, the SEC proposed a new rule 223-1 (the safeguarding rule) under the Investment Advisers Act of 1940 that would expand rule 206(4)-2 (the custody rule) to apply not only to customer funds and securities, but to all types of client assets, including digital assets that may not be characterized as securities (such as Bitcoin). The safeguarding rule, if adopted, would require registered investment advisers that are advising clients to buy digital assets to ensure the client's digital assets are held by a qualified custodian. Under the proposed rule, investment advisers would have to draw up written agreements with and obtain certain reasonable assurances from qualified custodians to ensure clients receive certain standard custodial protections for their assets. In accordance with the proposed safeguarding rule, those qualified custodians would be subject to independent audits and regular disclosures and would need to ensure client assets are properly segregated and held in accounts designed to protect the assets in the event of a qualified custodian bankruptcy or other insolvency

¹⁹ According to 23 NYCRR § 200.2(q), virtual currency business activity is any of the following business activities involving New York state or a resident of New York state:

- (1) Receiving virtual currency for transmission or transmitting virtual currency, except where the transaction is undertaken for non-financial purposes and does not involve the transfer of more than a nominal amount of virtual currency
- (2) Storing, holding, or maintaining custody or control of virtual currency on behalf of others
- (3) Buying and selling virtual currency as a customer business
- (4) Performing exchange services as a customer business
- (5) Controlling, administering or issuing a virtual currency

²⁰ 23 NYCRR 200.3(c)(1)

²¹ www.dfs.ny.gov/industry_guidance/industry_letters/il20230123_guidance_custodial_structures

OVERVIEW OF KEY INSOLVENCY EXPOSURES

What is the General Nature of the Rights of the Digital Asset Intermediary and the Customer?

As with similar arrangements relating to other asset classes, services provided by digital asset intermediaries may refer to different types of legal relationships, depending on a number of factors. These factors may include the precise legal characterization of the arrangement (eg, whether it is a trust or bailment), any statutory protections that might apply to the arrangement, the nature of the assets, the location (or deemed location) of the assets, and the respective rights and responsibilities agreed between the custodian and the customer.

In assessing the potential insolvency exposures faced by customers of a digital asset intermediary and their rights to holdings of digital assets, a key consideration is the nature of the rights of the customer as a matter of the law of the digital asset intermediary's insolvency jurisdiction. In many cases, this will coincide with the law governing the relationship between the customer, digital asset intermediary and assets, although that may not always be the case.

While conflict-of-laws issues are beyond the scope of this paper, the law governing the relationship between the customer and the digital asset intermediary and the law determining the rights of the customer following insolvency of the digital asset intermediary are important issues. These considerations are not unique to digital assets as they relate to the relationship between two entities rather than the location of the assets themselves.

At a general level, the customer's rights can be described as:

- Proprietary rights to specific custodied assets (property rights);²²
- A statutory preference or other priority claim to specific custodied assets (a statutory preference); or
- A contractual claim for the transfer to the customer or to its order of assets shown in the account maintained by the digital asset intermediary for the customer (a contractual claim).

In many cases, a significant factor in determining the nature of the customer's rights – in particular, whether they amount to property rights, are eligible for a statutory preference or encompass a contractual claim – will be the terms of the relationship set out in the standard documents of the digital asset intermediary²³. These need not be mutually exclusive and there may be overlap between these categories, depending on the jurisdictions and the arrangements in question. It is the nature of the customer's rights prior to the relevant insolvency event that will determine how it is treated in an insolvency scenario.

²² It is assumed for the purposes of this paper that digital assets may be fitting objects of property rights, but uncertainty could arise over the law applicable to the transfer and creation of those rights. As a matter of English law, it is generally understood that the law determinative of proprietary rights or interests in personal property should be established by reference to the *lex situs* (location) of that property. For certain types of digital assets (particularly those that are held on public DLT platforms maintained by a network of nodes spanning multiple jurisdictions), the *lex situs* of the assets may not be immediately clear. However, recent cases considering the *lex situs* of certain digital assets have generally determined it to be the place "where the person or company who owns it is domiciled" (see *Ion Science v Persons Unknown* (unreported) (December 21, 2020) at Section 13)

²³ Certain contractual arrangements may be prescribed under specific statutory or regulatory regimes. As a matter of English law, insofar as the relevant digital assets are security tokens, the UK Financial Conduct Authority (FCA) has been clear that "[w]here cryptoassets are specified investments (ie, security tokens), firms carrying out regulated activities involving custody of these assets are likely to be subject to the CASS regime". CASS 6 is prescriptive in terms of the matters that should be included by firms in their arrangements with third parties and describes the items required by the FCA for inclusion in agreements documenting custodial and sub-custodial arrangements (see CASS 6.3.4AR and CASS 6.3.4BG)

Position Under New York Law

Under New York law, whether a custodial relationship is established between a digital asset intermediary and its customer largely depends on whether the asset in custody is held on special or general²⁴ deposit. If the asset is held on special deposit, a bailment or trust relationship is created.

In determining whether parties intended a deposit to be special, courts will consider whether the underlying contract (including any terms of use) states that: (i) the customer expressly retains ownership of the asset; (ii) the customer pays a fee in exchange for the digital asset intermediary's services (as opposed to the digital asset intermediary paying the customer accrued interest for amounts held on deposit); and (iii) the digital asset intermediary is required to segregate and not commingle the asset with its own assets or the assets of other customers.

If a special or custodial relationship is established, beneficial ownership of the digital assets remains with the client, which would therefore have proprietary rights to the asset. The client would also have contractual rights in line with its underlying agreement with the digital asset intermediary and may have additional rights under common law, depending on the exact nature of the parties' relationship (ie, fiduciary rights). As such, digital assets held in a custodial relationship will likely not be considered part of the debtor's estate in the event of a digital asset intermediary's insolvency proceedings. The Treatment of Digital Assets on Insolvency section discusses the treatment of digital assets held with the digital asset intermediary following its insolvency in more detail.

In New York, a custodian may also act as a securities intermediary under Article 8 of the state of New York's Uniform Commercial Code (NY UCC), with duties owed to the client as an entitlement holder under Article 8²⁵. For any financial asset in its custody, the securities intermediary has a duty to: (i) maintain a quantity of the asset equal to the aggregate of the entitlement holder's claims or, in the case of omnibus segregation, all entitlement holders' claims; (ii) take action to obtain any payment or distribution made in respect of the asset; (iii) exercise rights associated with the asset as directed by the entitlement holders; (iv) comply with any order of transfer or redemption; and (v) comply with any direction to exchange the asset into another available form of holding for which the entitlement holder is eligible or transfer the asset into the securities account of another securities intermediary.

A securities intermediary²⁶ can be any person (including a bank or broker) that, in the ordinary course of its business, maintains accounts holding securities or other financial assets for the benefit of others²⁷. Under Article 8 of the NY UCC, a securities intermediary holds a financial asset for the benefit of the entitlement holders. The financial asset is generally not considered property of the securities intermediary and is not available to satisfy its creditors.

²⁴ A general deposit does not create a custodial relationship under New York law, but instead creates a debtor-creditor relationship. Unlike a special deposit, digital assets held in a debtor-creditor relationship will likely be considered part of the debtor's estate in the event of a digital asset intermediary's insolvency proceedings. The Treatment of Digital Assets on Insolvency section discusses the treatment of digital assets held with the digital asset intermediary in the event of its insolvency in more detail

²⁵ Certain states, including New York, are currently considering proposed amendments to the UCC Article 12 that establish rules for secured transactions involving, and establishing perfection of security interests in, digital assets such as crypto. These rules may be available in the future if adopted by the state of New York or any other state

²⁶ For the digital asset intermediary to be considered a securities intermediary under Article 8 of the UCC, the contractual arrangement between the parties will need to: (i) designate the crypto in the digital asset intermediary's custody as a financial asset; and (ii) require the digital asset intermediary to perform the duties of a securities intermediary prescribed under Section 5 of Article 8 with respect to the crypto in its custody, among other things. No court has considered whether it makes sense to apply the rules of Article 8 if the underlying asset is crypto. Client crypto that is commingled under an omnibus wallet structure may be at risk of being considered property of the digital asset intermediary in the event commingling destroys or impairs any bailment or trust relationship and Article 8 is found not to apply in these circumstances

Position Under UK Law

Under English law, a custodian of intangible assets (such as digital assets) that holds those assets in a form that is identifiable as belonging to customers would generally be characterized as a trustee acting for its customers as beneficiaries²⁷. In this way, a digital asset intermediary having control of a wallet on behalf of its customers will typically hold legal title to the digital assets recorded to the corresponding public key address, with the customer having a beneficial interest in those assets (subject to and in accordance with the terms of the trust arrangement and the custody agreement between the client and the digital asset intermediary)²⁹.

In this scenario, the client (as ultimate beneficial owner of the digital assets) will generally have both property rights in the digital assets held by a digital asset intermediary and personal rights (such as a contractual claim³⁰) against the digital asset intermediary. The trust assets (the digital assets in custody) would not fall within the insolvency estate of the digital asset intermediary if the trust is recognized in the jurisdiction of the relevant insolvency proceedings³¹.

Loss Scenarios

As in the case of custody relating to other asset types, a valid custody arrangement is not an assurance that the customer's assets will be protected in all scenarios. Two specific scenarios are described in which a customer may be exposed to the risk of losing its assets following insolvency of a digital asset intermediary (notwithstanding the customer's property rights in or statutory preference to the relevant digital assets).

²⁷ A financial asset can be any asset that is designated as such by the securities intermediary and the customer (referred to under Article 8 as the entitlement holder) in the parties' contractual arrangement. For the financial asset designation to be effective, some authority suggests that courts should analyze the underlying agreement in its entirety to determine whether it makes sense to apply the duties of a security intermediary under Article 8 given the context of the parties' relationship. No court has considered, and it is not clear, whether it makes sense to apply such duties where the underlying asset is crypto so Article 8 of the NY UCC would apply

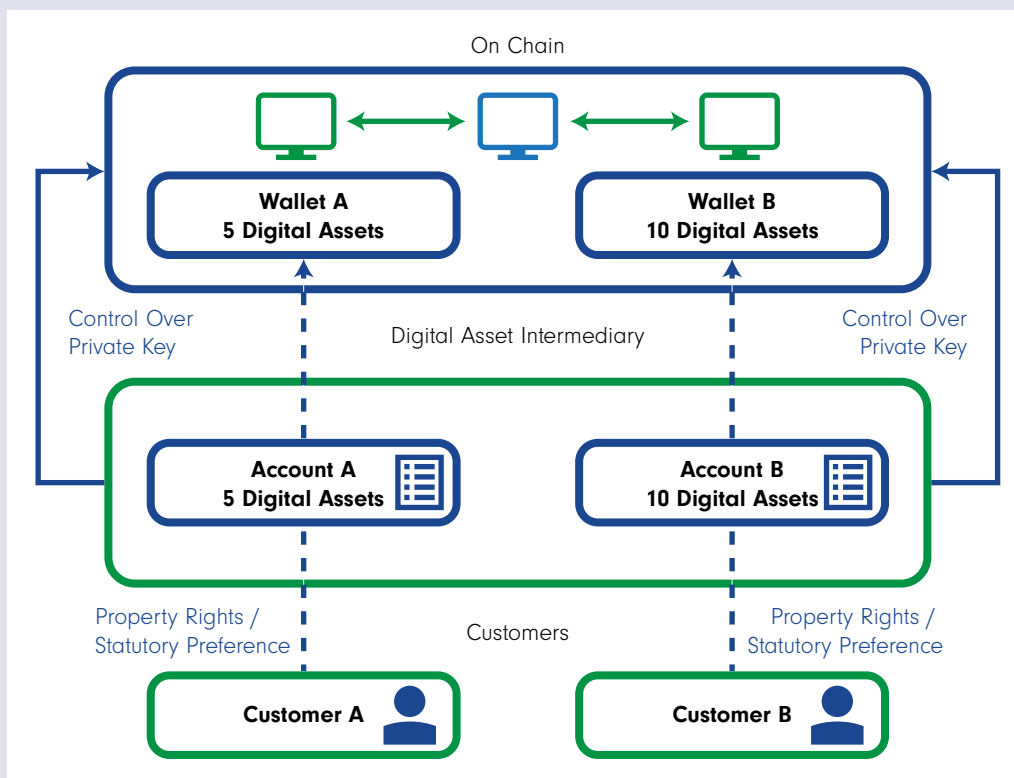
²⁸ For further discussion on trust-based arrangements and their application to digital assets, see paragraph 16.52, Law Commission, Digital Assets: Consultation Paper (www.lawcom.gov.uk/document/digital-assets-consultation-paper/)

²⁹ It is also conceivable that English law may develop to recognize bailment-type custody arrangements for digital assets (where legal title to the digital assets remains with the client). However, it is not currently clear that a digital asset intermediary could act as bailee of digital assets because the law of bailment traditionally relies on the concept of possession that has been developed for tangible objects of property, rather than intangible objects such as digital assets

³⁰ It is possible that a prospective contractual claim could be undermined to the extent the digital asset intermediary has validly limited its liability. However, in many jurisdictions (including the UK), the law restricts the ability of a party to limit its liability, especially when contracting on standard terms

³¹ That said, recovery would still remain subject to the trustee's right to be indemnified for expenses and liabilities properly incurred in the performance of its duties. In addition, where the digital assets are held in an omnibus wallet or account, there may be some uncertainty over the nature of the trust created. The general position, as a matter of English law, is that one global trust over all the clients' digital assets is identified in favor of all relevant clients where each client owns a specific pro-rata share in the trust property

Individual Client Segregation

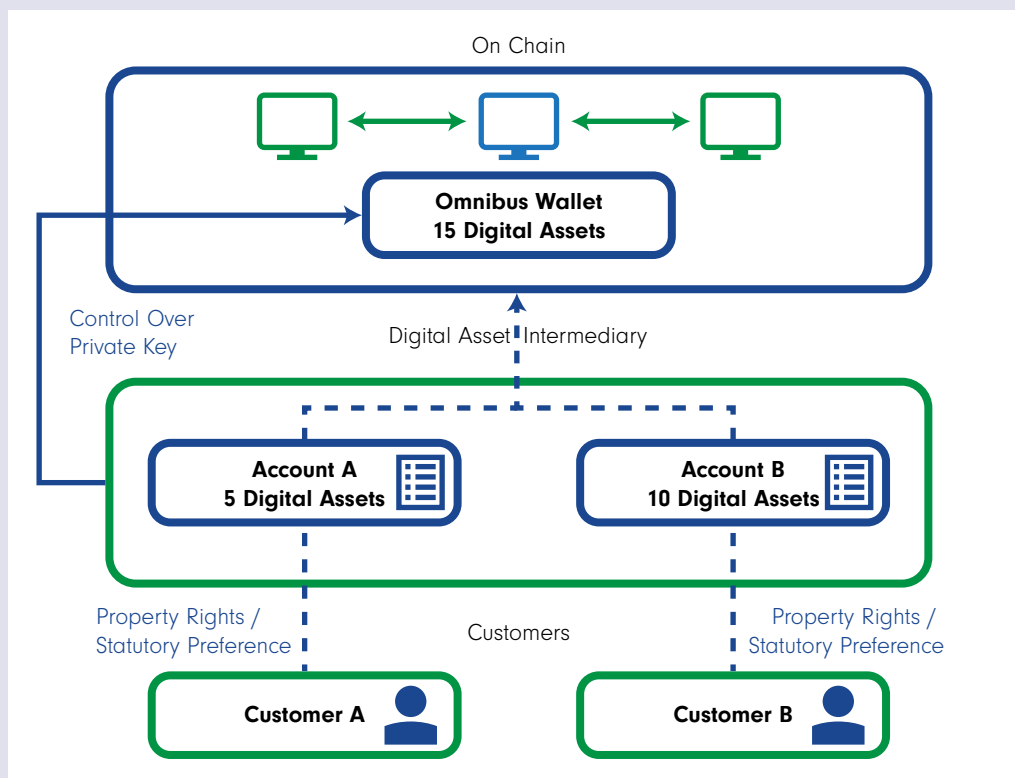


In this scenario, the digital asset intermediary offers individual segregation at both a wallet and account level. Wallet A and wallet B are under the control of the digital asset intermediary (ie, the digital asset intermediary has control over the private key necessary to effect on-chain transfers for the digital assets in both wallet A and wallet B). Based on the jurisdiction and the terms of the arrangement between the digital asset intermediary and each customer, customer rights over the digital assets in their respective wallets amount to property rights and/or are eligible for a statutory preference.

If wallet A is hacked, causing the irrecoverable dissipation of the five digital assets in wallet A, there would be a discrepancy between the books and records of the digital asset intermediary (ie, five digital assets in account A) and the on-chain records (ie, zero digital assets in wallet A). There would be no such discrepancy with respect to account B and wallet B.

Setting aside any possibility of tracing the five digital assets removed from wallet A, customer A would face a potential loss (subject to any claim customer A may have against the digital asset intermediary, which would depend on the terms of the arrangement agreed between the digital asset intermediary and customer A, among other things). In contrast, customer B would be unaffected by the hack and would be entitled to the 10 digital assets in wallet B (all other things being constant).

Omnibus Client Segregation



In this scenario, the digital asset intermediary maintains an omnibus wallet while offering individual segregation at an account level (ie, the digital asset intermediary maintains segregated accounts in the name of each customer in its books and records). The omnibus wallet is under the control of the digital asset intermediary – it has control over the private key necessary to effect on-chain transfers from the omnibus wallet. Based on the jurisdiction and the terms of the arrangement between the digital asset intermediary and each customer, customer rights over the digital assets in the omnibus wallet amount to property rights and/or are eligible for a statutory preference.

If the omnibus wallet is hacked (causing the irrecoverable dissipation of five of the 15 digital assets in the wallet), there would be a discrepancy between the aggregate position recorded in the books and records of the digital asset intermediary (ie, five digital assets in account A and 10 digital assets in account B) and the on-chain records (ie, 10 digital assets in the omnibus wallet). This would mean the digital assets in the omnibus wallet are insufficient to meet the claims of both customer A and customer B.

Setting aside any possibility of tracing the five digital assets removed from the omnibus wallet, the loss allocation of those assets will depend on various factors, including the nature of customer rights over the digital assets, whether any applicable rules or presumptions relating to the attribution of comingled assets apply, and whether the rules or presumptions have been validly replaced by express provision³².

³² A common approach in this case is for customers to bear losses pro-rata to their claims against the digital asset intermediary. For example, this would be the approach under the New York UCC Article 8 and was proposed by the International Institute for the Unification of Private Law as a general principle for digital assets in its Digital Assets and Private Law Public Consultation (see draft Principle 13(6))

Does the Use of a Sub-custodian by the Digital Asset Intermediary Affect the Rights of the End Customer?

Additional complexity is introduced in custody arrangements when the customer's interest in the relevant assets is further intermediated by a sub-custodian. Custody arrangements involving digital assets are no exception. While the general nature of the end customer's right to digital assets held by a sub-custodian is similar to a direct custody relationship, the strength of this right will hinge on the nature and enforceability of the digital asset intermediary's right to the digital assets against the sub-custodian.

In circumstances when a sub-custodian holds property rights or a statutory preference to the relevant digital assets for the benefit of the digital asset intermediary, the digital asset intermediary will hold its rights for the benefit of its customer.

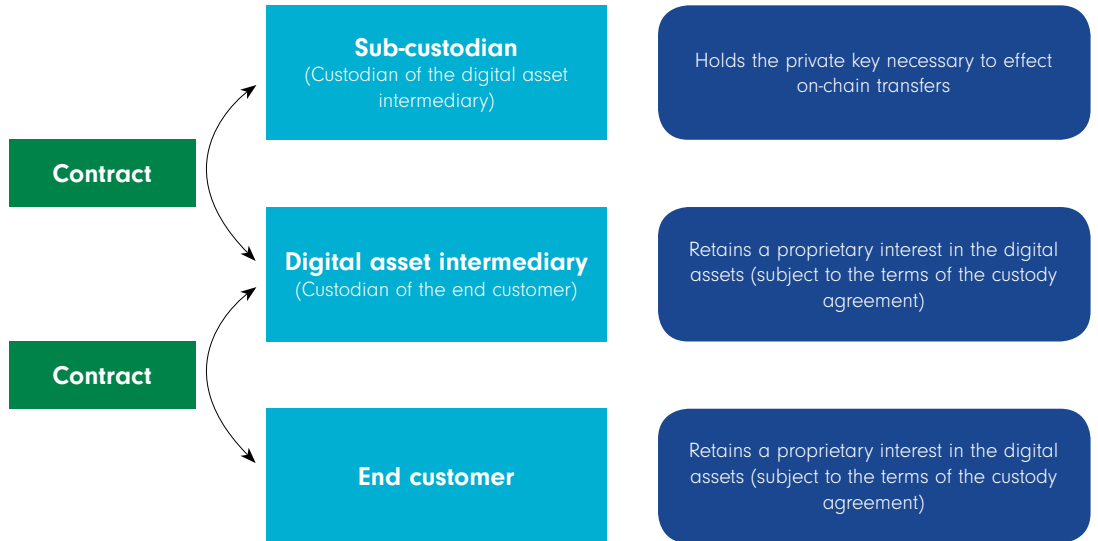
However, when a contract-based debtor-creditor relationship exists between the digital asset intermediary and the sub-custodian³³ (where the contract implies a transfer of title to the sub-custodian and not a trust or similar safekeeping arrangement), the digital asset intermediary's rights will be against the sub-custodian under the contractual terms of the relevant agreement. The digital asset intermediary retains no property rights over the digital assets and will simply have a contractual claim for the value of the digital asset against the sub-custodian.

The strength of the customer's rights against the digital asset intermediary (notably, whether the customer ultimately faces the risk of insolvency of any sub-custodian) will depend on the arrangements throughout the custody chain. If the entire chain consists of back-to-back property rights or statutory preferences, then the rights of the customer of the digital asset intermediary will not be subject to the risk of an insolvency higher up the chain.

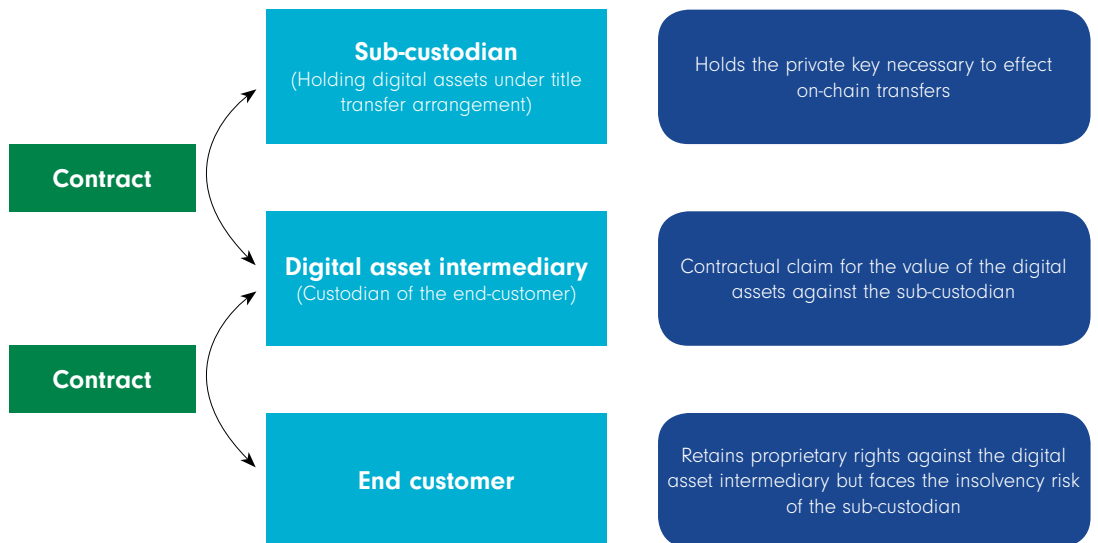
If the digital asset intermediary only has a contractual claim against the sub-custodian (or otherwise faces insolvency risk of the sub-custodian under the terms of the arrangement between them), then the customer lower down the chain will obtain no better right than against the digital asset intermediary. This means that even when the customer has property rights or a statutory preference against the digital asset intermediary, if the property rights or statutory preference are contractual claims against an insolvent sub-custodian, then the customer will be subject to the risk of insolvency of that sub-custodian.

³³ The term is used here in a loose sense to describe the entity to which title in the digital assets is transferred

Back-to-back Property Rights



Digital Asset Intermediary has Contractual Claim Only



This is no different to any other sub-custody arrangement. If the intention is to confer upon the customer property rights or statutory preferences (through a chain of sub-custody arrangements) to the digital assets without exposing the customer to the insolvency risk of any sub-custodian, then a review of the arrangements throughout the custody chain should be undertaken by the digital asset intermediary (as a matter of the law governing those arrangements) to ensure the digital assets are held remotely from the insolvency of each sub-custodian.

Even when the customer retains property rights or a statutory preference through the chain of custody, these types of sub-custodial arrangements may still introduce some additional operational or practical risks at the level of each new custodian in the chain. For example, a clerical, operational or systems error or fraud could lead to a shortfall of digital assets held by an intermediate custodian, even in circumstances where the validity of the chain of back-to-back property claims or statutory preferences remains unaffected.

TREATMENT OF DIGITAL ASSETS ON INSOLVENCY

If a Digital Asset Intermediary is Subject to an Insolvency Event, Would the Digital Assets Held in Custody Form Part of the Insolvent Estate of the Digital Asset Intermediary?

Generally speaking, the treatment of digital assets held with a digital asset intermediary in the event of its insolvency will depend on the legal basis on which the relevant digital assets are held by the digital asset intermediary prior to the insolvency event. The nature of the client's rights against a digital asset intermediary or any relevant sub-custodian will determine the nature of its claim against that entity in any insolvency proceedings – ie, whether the client has a property right or statutory preference with respect to specific digital assets or whether it simply has a personal claim (such as a contractual claim) against its direct custodian.

- **Contractual claim:** For a contract-based debtor-creditor relationship, the client has no proprietary entitlement or encumbrance over the digital assets and simply has a personal contractual claim for the value of the digital assets. In these circumstances, the client will likely rank equal to general unsecured creditors in the event of the insolvency of the digital asset intermediary, assuming there are no other arrangements in place to address this risk (such as security or other collateral arrangements).
- **Property rights/statutory preference:** If the customer holds property rights or a statutory preference to the relevant digital assets held by the digital asset intermediary, the assets will generally not be available following insolvency of the digital asset intermediary to satisfy the amounts owed to its general creditors. This ensures customer assets are protected following the insolvency of the digital asset intermediary (sometimes referred to as bankruptcy remoteness).

However, this does not mean customers will necessarily be able to take those assets immediately and move them to another platform. Even if the customer does have property rights or a statutory preference in digital assets held by the digital asset intermediary, identifying and locating the relevant assets and determining which parties have claims over those assets can be complex and take a significant amount of time to resolve following insolvency due to practical/factual uncertainties (as with the FTX, Celsius and BlockFi US chapter 11 proceedings³⁴).

This risk is likely to be exacerbated if there are no clear operational and other arrangements in place to enable the insolvency official (or the trustee or receiver) to identify assets held for customers, confirm they are bankruptcy remote and determine the respective interests of customers quickly and with a high degree of confidence.

Similar issues arise for digital asset intermediaries that hold digital assets with a sub-custodian. Following the insolvency of the sub-custodian, the strength of the customer's rights to the underlying assets will depend on the nature and enforceability of the digital asset intermediary's right to the digital assets against the sub-custodian.

³⁴ See *FTX Has Recovered 'Over \$5B' in Assets, Bankruptcy Attorney Says*, January 11, 2023, www.coindesk.com/policy/2023/01/11/ftx-has-recovered-over-5b-in-assets-bankruptcy-attorney-says/. The article states that three months into the chapter 11 proceedings, FTX had recovered \$5 billion in assets, although there was still a sum owed to customers missing and it was unclear what that amount would be; see Celsius Hearing Presentation, March 8, 2023, Case No. 22-10964-mg D.I. 2197, which states that withdrawal of certain custody funds began on March 2, 2023 after withdrawals were authorized in early December and following a three-month period of assessing eligibility of customers, accounts and funds; see Debtors' Motion to Honor Wallet Account Withdrawals, December 19, 2022, Case No. 22-19361-mbk, D.I.121 and Ad Hoc Committee of Wallet Account Holders' Response in Opposition, January 23, 2023, Case No. 22-19361-mbk, D.I. 360, in which the Ad Hoc Committee of Wallet Holders argued that certain funds could not be returned before certain fact-intensive discovery establishing the funds to be the rightful property of the owners rather than property of the estate was taken, an issue that is still pending before the Bankruptcy Court

How in Practice can Digital Assets be Recovered from the Insolvent Estate of a Digital Asset Intermediary?

The process and timing for claims for the recovery of digital assets following the failure of a digital asset intermediary or sub-custodian will depend on the insolvency procedure applicable to the failed entity³⁵. This may require complex analysis and involve cross-border considerations.

Position Under UK Law

In the UK, special resolution regimes will apply to digital asset intermediaries that are operating as banks, certain investment firms and recognized central counterparties (and, in some cases, their group companies) that find themselves in financial difficulty. It also establishes two insolvency regimes (bank insolvency and bank administration) that apply to these entities and are largely modifications of the general insolvency regime tailored for financial firms.

Position Under US Laws

In the US, there may be different insolvency regimes available to an entity, depending on how the business is set up. Several digital asset intermediaries have been organized as trust companies or special purpose depository institutions under state and federal law and are structured to be regulated and supervised by the relevant state or federal banking authority.

If a regulated entity becomes troubled or insolvent, the relevant state or federal banking authority may appoint a receiver to wind up the affairs of the insolvent entity. In other cases, chapters 7 or 11 of the US Bankruptcy Code may be used for an orderly wind down or reorganization. The insolvency regime used to liquidate a business would not be a matter of choice for customers and neither regime would give customers better treatment. The regime used is determined by US federal or state law based on what type of business the entity is. The applicable law determines the customers' rights to the property in liquidation.

In addition to the procedural requirements raised by the relevant insolvency regimes applicable to the failed entity, there are several additional legal and practical issues in relation to controlling, distributing, recovering and tracing digital assets (if customer assets have been wrongfully dissipated). While many of these issues are not unique to digital assets, their legal and technological nature may present distinctive challenges.

³⁵ In many jurisdictions, there will be no specific insolvency regime for digital asset intermediaries and the general insolvency regime will therefore apply. In the US, the insolvency regime will depend on the type of business entity of the digital asset intermediary. If regulated by the New York Department of Financial Services, for example, it will be a receivership

- **Obtaining control of the digital assets:** An insolvency official or trustee would not be able to liquidate a company's digital asset holdings unless it has knowledge of their existence and has access to or control over the relevant private key. Despite the statutory tools that may assist an administrator or liquidator should this situation occur³⁶, there could be difficulties if senior managers are unavailable or uncooperative. This scenario may be further complicated if the private keys have been sharded³⁷ or responsibility for authorizing transactions has been distributed across multiple third-party entities or devices.
- **Hackers and the use of mixer accounts:** It is possible for digital asset intermediaries to be hacked due to inadequate security measures or technical vulnerabilities. It is also possible for digital assets to be put through mixer accounts, which may make tracing difficult by obscuring on-chain transfers. In either case, customers may be unable to recover their assets in full, even if they have property rights or statutory preferences in those assets. Depending on the relevant terms of use, customers' prospective contractual claims may also be undermined if the digital asset intermediary has taken steps to legitimately limit its liability.
- **Clawback:** If it is discovered that a company had transferred digital assets for less than their proper value, statutory clawback provisions may apply. While the public nature of DLT transaction histories may make it relatively easy to trace the company's digital asset transactions, the anonymity inherent in the system may make it difficult to identify the owner of the corresponding public key, even if the assets can be traced to a particular public key address³⁸. As a matter of English law, Sections 234 and 236 of the Insolvency Act 1986 provide statutory tools that may assist an administrator or liquidator should this situation arise. Section 234 is relevant where "any person has in his possession or control any property, books, papers or records to which the company appears to be entitled"³⁹.

Both federal and state laws in the US allow transfers to be avoided or unwound if they were made under certain fraudulent circumstances. For example, US Bankruptcy Code Section 548 allows a trustee to avoid transfers made prior to the bankruptcy filing if the debtor made the transfer with the intent to hinder, delay or defraud its creditors, or if the transfer was for less than "reasonably equivalent value" while the debtor was insolvent. Recovered funds will then be redistributed to the debtor's creditors, including any customers to the extent they are creditors.

³⁶ In the case of the administration or liquidation of a company in the UK, Sections 234 and 236 of the Insolvency Act 1986 provide statutory tools that may assist, Section 234 being relevant where "any person has in his possession or control any property, books, papers or records to which the company appears to be entitled". Similarly, in a US bankruptcy proceeding, a trustee may be appointed to liquidate the bankrupt estate. According to Bankruptcy Code Section 704, the trustee may sell the debtor's assets and pursue claims on behalf of the debtor to maximize funds available for distribution to creditors. To that end, the trustee has the authority and standing to collect and/or take account of all "property of the estate" to reduce it to money for the benefit of creditors. Gaining access to private keys would therefore fall under the purview of the trustee's liquidation authority

³⁷ Sharding refers to a process where a private key is split into multiple parts (or shards) and encrypted. A certain number of key shards (eg, two of three) are required to authorize an on-chain digital asset transaction

³⁸ Even in circumstances when a customer's assets can be traced to an identifiable third party, they may still encounter difficulties in proving and enforcing ownership rights in those assets. That's because the rules in many jurisdictions for transfers of certain digital assets (namely cryptocurrencies such as Bitcoin and Ether) to innocent or good faith acquirers are still to be determined

³⁹ Although an uncooperative holder of a private key might argue that the private key itself (as opposed to the related digital asset represented by the underlying digital asset) is not property, it is likely the private key would fall within the purview of one or more of these statutory tools, particularly if the private key, or means of accessing it, is stored as part of the company's books, papers and/or records

CONCLUSION

This whitepaper has focused on how digital assets can be held by customers through intermediaries and how those assets can be protected following an intermediary's insolvency. The analysis demonstrates that both English and New York law recognize digital assets as capable of being the subject of property rights. It also shows that regulated digital asset intermediaries are required to adhere to existing rules governing custodial arrangements and protection of customer assets and existing insolvency regimes will generally apply to digital asset intermediaries.

The primary recommendation of this paper is that rules governing the ownership of customer digital assets following the insolvency of an intermediary should be made as clear as possible to ensure customers have the expected levels of asset protection. It explains that application of these rules requires consideration of the legal structure of the arrangement, the operational measures designed to implement it and the applicable regulatory framework.

The legal structure of the arrangement is central and will generally determine the level of customer asset protection, the extent to which certain regulatory rules apply and the operational approach to the segregation of customer assets. Ensuring contractual terms between the customer and the digital asset intermediary are both clear and effective in constituting the desired arrangement is therefore critically important.

The contractual terms should establish the basis on which assets are held by the digital asset intermediary. Omnibus segregation of client assets is the baseline standard for client asset protection and is an appropriate starting point for most negotiations. However, customers should always be free to negotiate higher (or lower) levels of protection based on their intended trading or investment activity (subject to applicable regulatory requirements). Digital asset intermediaries should ensure the contractual arrangement accurately reflects the agreed approach to the segregation of customer assets and they have robust operational mechanisms in place to record and segregate assets. They should also consider their approach to the use of sub-custodians, information security, business continuity and disaster recovery.

Customers should know which jurisdiction would govern the insolvency of the intermediary, recognizing that it may not always be the jurisdiction of the intermediary's incorporation. There will also be broader regulatory issues, driven by the regulatory framework that applies to the parties, the nature of their own regulatory structure and the activities they are conducting. As with the legal structure, it is vital both parties understand the nature of any regulatory obligation that applies with respect to their arrangement and ensure the arrangement complies with all applicable rules.

Each of these considerations will require some discussion and negotiation among the parties. Appendix 1 sets out a list of practical questions that customers should ask to determine the level of protection they have. These questions also provide direction for adoption by digital asset intermediaries, helping them to promote clear standards that give customers the best possible protection in insolvency proceedings.

These issues are not necessarily specific to digital assets and represent best practices that have been established in traditional markets over many decades. While this paper highlights that these practices can be applied to digital asset intermediation, there are certain issues relating specifically to digital assets that present some novel legal and practical questions that do not have a ready analogy in traditional finance.

For example, the use of wallets and private keys may require new processes and procedures relating to data security, as control of the private key will typically equate to control of the digital asset. The use of DLT to record digital assets may present some novel practical issues in identifying and recovering assets post-insolvency. There also remains a theoretical risk that a claim to a digital asset recorded on a decentralized, permissionless blockchain could be complicated or challenged due to a lack of clarity over which governing law applies to the blockchain or which court(s) have jurisdiction to enforce the claim. ISDA supports ongoing work by national authorities and international organizations to provide clarity in this area, as well as new conventions for resolving conflict-of-laws issues.

The resolution of these issues should not prevent or delay the urgent work that is now necessary to bolster the legal foundations upon which these asset holding structures are established and administered in the digital asset market. In the wake of FTX's collapse, customers are increasingly alert to the risks associated with holding digital assets with intermediaries and will expect the same levels of asset protection that exist in traditional markets. Consequently, there is likely to be a flight to quality among investors in the digital asset market, creating incentives for digital asset intermediaries to ensure their arrangements are clear, legally and operationally robust, and consistent with industry best practice.

ISDA intends for this paper to serve as a guide for market participants and regulators in assessing and improving current practices to address any gaps that may exist and to shield customers from the devastating consequences of financial failures and market collapses that shook the digital asset ecosystem in 2022. Alongside this vital work, ISDA's mission remains the same: to foster safe and efficient derivatives markets in both traditional and digital assets. This is achieved by promoting legal and operational standardization and the use of effective credit risk mitigation techniques (such as netting and collateral) to reduce credit exposure to failing institutions and provide insulation against the contagion effect of market failures.

APPENDIX

Practical Steps to Ensure Arrangements with a Digital Asset Intermediary are Robust from an Insolvency Perspective⁴⁰

Table A contains a list of questions that investors can ask to evaluate the level of protection they will have. These questions can also guide digital asset intermediaries in developing clear standards that aim to provide customers with the expected levels of protection, particularly during insolvency proceedings.

Table A

Category	Question
Regulatory	Is the digital asset intermediary licensed or registered in a preferred jurisdiction and, if so, is it subject to any specific regulatory requirements?
Regulatory	Does the digital asset intermediary have a regulatory obligation to hold assets for customers in a manner that is segregated and distinguishable from its own?
Legal	Does the digital asset intermediary have a contractual obligation to hold assets for customers in a manner that is segregated and distinguishable from its own?
Legal	What rights are granted to customer assets under any relevant agreement between the customer and digital asset intermediary?
Legal	What is the insolvency jurisdiction of the digital asset intermediary?
Legal	What rights does the customer have relating to customer assets in the insolvency jurisdiction of the digital asset intermediary?
Operational	What is the digital asset intermediary's approach to private key storage and other applicable security mechanisms (such as the use of sharding or multi-signature wallets)?
Operational	What disaster recovery processes are in place?
Operational	Are the rights granted under any relevant agreement between the customer and digital asset intermediary reflected in the digital asset intermediary's operational processes and reporting procedures?
Operational	Does the digital asset intermediary have a plan or other procedures in place to ensure an insolvency administrator would be able to recover the digital assets controlled by the digital asset intermediary in the event of its insolvency?

⁴⁰ These practical steps are subject to conflict-of-laws issues that are beyond the scope of this paper

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Since 1985, ISDA has worked to make the global derivatives markets safer and more efficient. Today, ISDA has over 1,000 member institutions from 79 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In

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