

# TOKENIZED REAL ESTATE: THE LAW AND TECH OF DIGITAL DEEDS

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*The advent of blockchain technology has generated bold claims that non-fungible tokens (NFTs) can fundamentally transform real estate. Proponents assert that digital assets can tokenize real property interests: the concept of using digital tokens to represent ownership rights in physical property. Their goal is to allow buyers and sellers to transfer real estate through simple blockchain transactions, thereby eliminating traditional intermediaries, reducing costs, and accelerating deal velocity. This Essay provides the first comprehensive legal analysis examining whether American law actually supports such a direct tokenization of real estate rights.*

*Our investigation reveals a stark disconnect between technological capability and legal authority. While distributed ledger technology allows for the effortless creation of tokens that purport to represent real estate assets, current property law does not recognize such representations as legally effective. The core problem lies in a fundamental misunderstanding of tokenization itself: it is not a creature of technology but a legal construct, requiring explicit grounding in the law.*

*American property law, with its elements cemented over centuries, presents formidable obstacles to this digital alchemy. Statutes of frauds demand written instruments with specific formal elements, while property law fundamentally forbids bearer instruments that would transfer ownership through mere possession of a token. Even where electronic transaction laws might accommodate digital deeds, the title assurance system creates a dual ledger problem, requiring parallel maintenance of both blockchain records and traditional county land records. Yet rather than rejecting digital innovation, this Essay endorses its thoughtful deployment, demonstrating that blockchain technology yields its greatest benefits through integration with existing legal frameworks rather than in their displacement.*

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## INTRODUCTION

The promise of blockchain technology has captivated entrepreneurs, investors, and technologists with visions of revolutionary transformations across virtually every sector of the economy. Proponents herald distributed ledger technologies (DLT) as the foundation for a new digital economy where traditional intermediaries become obsolete, transaction costs plummet, and previously illiquid assets achieve unprecedented mobility. The key to this transformation, they argue, is *tokenization*: the process of using one object to represent rights in another. In the real estate sector, this technological optimism has manifested in bold claims that these technologies can fundamentally reimagine how we own and transfer real property. In this Essay, we tackle these assertions and show how illusory these promises really are.

The core proposition fueling the movement for real estate tokenization is deceptively simple: that digital assets can directly embody ownership of real property, thereby enabling buyers to acquire and sellers to convey title by purchasing and selling tokens through blockchain transactions. Proponents contend that this approach will eliminate the byzantine complexity of traditional real estate transactions, reduce costs, accelerate deal velocity, and democratize property investment. As Jerry Chu, founder of tokenization platform Lofty,

declares: “Real estate transactions have traditionally been very paperwork heavy . . . we want to update it so it’s a 21st-century process.”<sup>1</sup>

This narrative of radical simplification has generated widespread enthusiasm. Consider the sweeping predictions: tokenization will “upend investing in ways similar to how streamers radically changed how people watch television,” a revolution that will purportedly broaden access to previously exclusive markets.<sup>2</sup> Commentators boldly forecast that \$4 trillion of real estate will be tokenized by 2035, increasing from less than \$0.3 trillion in 2024.<sup>3</sup> Blockchain-based systems will allow “everyday investors from around the world” to “co-own villas, apartments, and buildings in one of the world’s most dynamic real estate markets, all without ever setting foot in a brokerage office.”<sup>4</sup> With purchases “recorded on an immutable blockchain,” buyers can “access legal ownership documents and engage in global real estate investments with ease,” meeting the needs of “digital nomads and remote workers seeking swift, uncomplicated investment methods.”<sup>5</sup> The appeal is undeniable: who wouldn’t want to replace months-long closing processes involving multiple intermediaries with near-instantaneous digital transfers?

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<sup>1</sup> Nikou Asgari, *Crypto Has Design On Real Estate*, FINANCIAL TIMES (Oct. 18, 2024), <https://www.ft.com/content/cf036ebf-6f4e-474f-a1ef-ca7179b712b0?>. See generally Seyedeh Fatemeh, Mottaghi, & Bertram I. Steininger, *Real Estate Insights: The Current State and the New Future of Tokenization in Real Estate*, EMERALD INSIGHT (Aug. 5, 2024), <https://www.emerald.com/jpif/article/42/6/614/1231337/Real-Estate-Insights-The-current-state-and-the-new>; Joshi Shashank & Arhan Choudhury, *Tokenization of Real Estate Assets Using Blockchain*, 18 INT’L J. OF INTELLIGENT INFO. TECHS. 373 (2024), <https://arxiv.org/pdf/2405.01852>; Ang Liu & Cheng Chen, *From Real Estate Financialization to Decentralization: A Comparative Review of REITs and Blockchain-Based Tokenization*, SCIENCE DIRECT (Feb. 2025), <https://www.sciencedirect.com/science/article/pii/S0016718524002549>.

<sup>2</sup> Alan Suderman, *The Risks and Rewards of Tokenization as Crypto Heavyweights Push for It*, WASH. POST (July 22, 2025), [https://www.washingtonpost.com/business/2025/07/21/crypto-robinhood-openai-tokenization-sec/b2f64c50-662f-11f0-ac4f-195fdb8ee9a8\\_story.html](https://www.washingtonpost.com/business/2025/07/21/crypto-robinhood-openai-tokenization-sec/b2f64c50-662f-11f0-ac4f-195fdb8ee9a8_story.html). See also R. Wilson Freyermuth, Christopher Odinet & Andrea Tosato, *Crypto in Real Estate Finance*, 75 ALA. L. REV. 94, 95-97 (2023).

<sup>3</sup> John D’Angelo et al., *Digital Dividends: How Tokenized Real Estate Could Revolutionize Asset Management*, DELOITTE FINANCIAL SERVICES (Apr. 24, 2025), <https://www.deloitte.com/us/en/insights/industry/financial-services/financial-services-industry-predictions/2025/tokenized-real-estate.html>.

<sup>4</sup> TOI World Desk, *UAE: What is Real Estate Tokenization? Dubai’s Prypco Sells Out DH1.75 Million Tokenized Villa in Under 5 Mins*, THE TIMES OF INDIA (July 13, 2025), <https://timesofindia.indiatimes.com/world/middle-east/uae-what-is-real-estate-tokenization-dubais-prypco-sells-out-dh1-75-million-tokenized-villa-in-under-5-mins/articleshow/122419572.cms>.

<sup>5</sup> Andrew Kamsky, *How NFTS Are Revolutionizing Real Estate Transactions*, CCN (Mar. 4, 2024), <https://www.ccn.com/education/how-nfts-are-revolutionizing-real-estate-transactions/>.

Yet beneath these ambitious claims lies a fundamental question that the crypto enthusiasts have largely avoided confronting: can existing law actually support the direct tokenization of real property rights? In the pages that follow, we provide the first comprehensive legal analysis of this question, examining whether American law (specifically, commercial and property law) permits digital assets to serve as vehicles for embodying and transferring ownership interests in real estate.<sup>6</sup>

Our investigation reveals a stark disconnect between technological capability and legal authority. While DLT systems can certainly create digital tokens that purport to represent property rights, the law does not recognize such representations being as legally effective.<sup>7</sup> We think that the core problem lies in a fundamental misunderstanding of how tokenization itself operates: it is a legal construct, not a technological innovation. Successful tokenization requires more than just technical capability. It has always required explicit legal recognition through legal frameworks, as demonstrated by historical examples from negotiable instruments to the recent 2022 UCC amendments that create new but limited avenues for digital tokenization of payment rights.<sup>8</sup> American property law presents insurmountable obstacles: statutes of frauds require written instruments with specific formal elements for real estate conveyances, and property law fundamentally prohibits bearer instruments that would transfer real estate ownership through simple possession.<sup>9</sup> Even where electronic transaction laws might accommodate digital deeds, the title assurance system creates a dual ledger problem requiring maintenance of both blockchain records and traditional county land records, failing to eliminate complexities while leaving token holders vulnerable to competing claims.

Our analysis here carries important implications beyond mere legal theory. The crypto real estate industry's promises of simplified, cost-effective property transfers rest on legally unsupported foundations that expose participants to severe risks. Buyers who believe they have acquired property rights through

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<sup>6</sup>In providing this original doctrinal analysis, we complement the work of Justin Lischak Earley by examining the legal feasibility question that precedes his normative policy analysis. While Earley persuasively argues that direct real estate tokenization should be avoided (even if it were legally possible) due to consumer protection concerns and systemic risks to the real estate economy. Our work in this Essay provides the foundational, academically-oriented legal analysis (from both a commercial and property law perspective) demonstrating that such tokenization faces insurmountable doctrinal barriers under current American law. See Justin D. Lischak Earley, *Bear with Me: The Bearer-Asset Dangers of Tokenizing Real Estate*, 46 PRAC. REAL EST. LAW. 25 (2024).

<sup>7</sup>See generally Juliet M. Moringiello & Christopher K. Odinet, *The Property Law of Tokens*, 74 FLA. L. REV. 607 (2022) (unpacking tokenization in digital asset markets involving NFTs); see also Christopher K. Odinet & Andrea Tosato, *Response: The Intersection of NFTs and Structured Finance*, 103 B.U. L. REV. 1005, 1010–12 (2023).

<sup>8</sup>See Andrea Tosato, Diane Lourdes Dick & Christopher K. Odinet, *Debt Tokens*, 173 U. PA. L. REV. 1103, 1158–62 (2025); Juliet M. Moringiello & Christopher K. Odinet, *The Property Law of Tokens*, Fla. L. Rev. 607, 615-18 (2022).

<sup>9</sup>See *infra* Part II.

token purchases may discover their claims are entirely void. Sellers who attempt to convey property through blockchain transfers may face liability for failing to deliver marketable title. Lenders who accept tokenized property interests as collateral may find themselves with a security interest in a worthless digital asset rather than prime real estate.

However, rather than dismissing digital innovation, this Essay seeks to provide a realistic assessment of what DLT systems can and cannot accomplish. To achieve this goal, our analysis proceeds in three Parts. Part I examines tokenization as a legal phenomenon, tracing its historical development through negotiable instruments, stock certificates, and bills of lading, before explaining how the 2022 UCC amendments have created limited avenues for digital tokenization. Part II tests whether digital assets can directly embody real property rights, examining both commercial law and property law frameworks. Lastly, Part III considers the private law implications of attempted real estate tokenization. In doing so, we distinguish between what current legal frameworks make impossible and what they permit under within clearly defined boundaries.

Our ultimate conclusion is that the benefits of blockchain technology for real estate lie not in circumventing centuries of property law but in harmonizing with its enduring architecture.

## I. TOKENIZATION IN LAW

Tokenization long predates blockchain technology by centuries.<sup>10</sup> Legal systems have long recognized sophisticated frameworks that allow tangible instruments to embody intangible rights.<sup>11</sup> This Part I first examines tokenization as a legal phenomenon, exploring historical precedents such as negotiable instruments, stock certificates, and bills of lading that successfully transformed simple paper documents into enforceable embodiments of property rights through common law and statutory developments.<sup>12</sup> We then turn to the 2022 amendments to the Uniform Commercial Code and their introduction of a new category of personal property, *controllable electronic records* (CERs).<sup>13</sup> This new law specifically enables the tokenization of specific payment rights as *controllable accounts* and *controllable payment intangibles*.<sup>14</sup> This analysis demonstrates how genuine digital tokenization emerges through explicit legal recognition, not mere technological innovation.<sup>15</sup>

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<sup>10</sup> See Moringiello & Odinet, *supra* note 7, at 615; Tosato, Dick, & Odinet, *supra*, note 8 at 1112; Odinet & Tosato, *Structured Finance*, *supra* note 8 at 1009-1011.

<sup>11</sup> *See id.*

<sup>12</sup> *See infra* Part I.A.

<sup>13</sup> *See infra* Part I.B.

<sup>14</sup> *See infra* Part I.B.

<sup>15</sup> *See infra* Part I.B.

### A. Concept and Applications

As noted above, the current discussion surrounding digital asset tokenization often treats the concept as revolutionary.<sup>16</sup> However, the fundamental idea of using one object to represent rights in another far predates the digital age and, indeed, is one of the cornerstones of commercial law.<sup>17</sup> Therefore, before evaluating whether digital assets like NFTs can, in law, embody rights in real estate, we first lay the historical and legal foundations of tokenization.

#### 1. In Theory

At its core, tokenization involves embedding intangible rights into objects that can be physically or digitally transferred from one party to another.<sup>18</sup> This process creates rights fundamentally different from those conferred by ordinary contractual agreements.<sup>19</sup> While standard contracts merely document legal arrangements between specific parties, tokenized rights become embodied in the token itself, creating what legal scholars refer to as “reification”—the conversion of abstract legal relationships into concrete, transferable assets.<sup>20</sup>

The power of tokenization lies in its ability to solve persistent commercial problems through carefully crafted legal rules.<sup>21</sup> It enables the circulation of rights without the practical difficulties of transferring possession of the underlying assets, it reduces transaction costs, it increases deal velocity, and it facilitates commerce between sometimes distant and unfamiliar parties.<sup>22</sup> Most importantly, tokenization creates standardized, recognizable instruments that

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<sup>16</sup> See World Econ. F., *Digital Assets, Distributed Ledger Technology and the Future of Capital Markets* 4 (2021), [https://www3.weforum.org/docs/WEF\\_Digital\\_Assets\\_Distributed\\_Ledger\\_Technology\\_2021.pdf](https://www3.weforum.org/docs/WEF_Digital_Assets_Distributed_Ledger_Technology_2021.pdf); see also Michael Casey & Paul Vigna, *The Truth Machine: The Blockchain and the Future of Everything* 87–102 (2018).

<sup>17</sup> See Moringiello & Odinet, *supra* note 7, at 615–27; see also Frederick Read, *The Origin, Early History, and Later Development of Bills of Exchange and Certain Other Negotiable Instruments*, 4 CANADIAN BAR REV. 440, 440 (1926); W. S. Holdsworth, *Origins and Early History of Negotiable Instruments I*, 31 L. Q. REV. 12, 12 (1915).

<sup>18</sup> See Moringiello & Odinet, *supra* note 7, at 615–27.

<sup>19</sup> See Grant Gilmore, *Formalism and the Law of Negotiable Instruments*, 13 CREIGHTON L. REV. 441, 443–44 (1979); See Moringiello & Odinet, *supra* note 7, at 615–27.

<sup>20</sup> Gilmore, *supra* note 19, at 449–50 (suggesting that the merger doctrine was developed for negotiable instruments and subsequently extended to bills of lading, warehouse receipts, share certificates, and bonds); see also Grant Gilmore, *The Commercial Doctrine of Good Faith Purchase*, 63 YALE L.J. 1057, 1074 (1954); *Financial Collateral: Law and Practice* 14 (Matthias Haentjens ed., 2020).

<sup>21</sup> See, e.g., Moringiello & Odinet, *supra* note 7, at 616.

<sup>22</sup> See Read, *supra* note 17, at 440, 455–56; Holdsworth, *supra* note 17, at 12, 13, 29.; see also Fred H. Miller, *Sales and Leases of Goods in a Nutshell* 127, 130–31 (4th ed. 2003).

third parties can rely upon, all without needing to investigate the original arrangements between the parties who created them.<sup>23</sup>

## 2. In Practice

Long before the distributed ledger technologies of Bitcoin and the like emerged on the scene, the law developed sophisticated frameworks allowing inanimate objects, typically pieces of paper, to embody intangible rights, such as claims of ownership and rights to payment.<sup>24</sup>

Negotiable instruments represent perhaps the oldest form of legal tokenization, transforming intangible payment rights into tangible documents capable of transfer through endorsement and delivery.<sup>25</sup> Medieval merchants developed bills of exchange to solve the dual problems of transporting heavy coins and circumventing restrictions on the export of currencies.<sup>26</sup> These lightweight paper documents allowed value to transfer across borders without actually physically moving coinage.<sup>27</sup> Over centuries, these merchant innovations evolved into sophisticated legal frameworks. Today, negotiable instrument law, codified in Article 3 of the UCC, requires that payment be unconditional, for a fixed amount, due on demand or at a definite time, and payable to bearer or a named person.<sup>28</sup> This contemporary tokenization framework enables routine high volume transactions to flow seamlessly through the global economy.<sup>29</sup>

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<sup>23</sup> See Read, *supra* note 17, at 440; Holdsworth, *supra* note 17, at 18–21; Martin J. Aronstein, *The Decline and Fall of the Stock Certificate in America*, 1 J. COMP. CORP. L. & Sec. Regul. 273, 273–78 (1978); see also James Steven Rogers, *Negotiability as a System of Title Recognition*, 48 OHIO ST. L. J. 197, 199–200 (1987).

<sup>24</sup> See Moringiello & Odinet, *supra* note 7, at 615–27; see also Read, *supra* note 17, at 440; Holdsworth, *supra* note 17, at 12.

<sup>25</sup> See A. H. Pruessner, *The Earliest Traces of Negotiable Instruments*, 44 AM. J. SEMITIC LANGUAGES & LITERATURES 88, 88 (1928); Edward Jenks, *On the Early History of Negotiable Instruments*, 9 L. Q. REV. 70, 73–74 (1893); W. S. Holdsworth, *Origins and Early History of Negotiable Instruments II*, 31 L. Q. REV. 173, 173 (1915); Read, *supra* note 17, at 440; Gilmore, *supra* note 19, at 441, 443–44.

<sup>26</sup> Holdsworth, *supra* note 17, at 13 (“This expedient was found in the adaptation of another kind of instrument which, in the late thirteenth and early fourteenth centuries, had been invented for the purpose of effecting an exchange of money without incurring the risks of its physical transportation. This instrument was the Bill of Exchange.”); Read, *supra* note 17, at 440, 447.

<sup>27</sup> See Holdsworth, *supra* note 17, at 27–30. The industrial revolution further refined these principles as commercial parties created paper currency substitutes to supplement inadequate money supplies. See Gilmore, *supra* note 19, at 447.

<sup>28</sup> U.C.C. § 3-104 (Am. L. Inst. & Unif. L. Comm’n 2002); see also Rogers, *supra* note 23, at 199–200.

<sup>29</sup> Rogers, *supra* note 23, at 199–200.

The tokenization of corporate ownership rights provides yet another compelling example.<sup>30</sup> Beginning with Italian city-states in the 1100s-1200s, early equity shares emerged as paper certificates granting fractional ownership stakes in business ventures.<sup>31</sup> The Dutch East India Company advanced this concept in the 1600s by creating the first publicly traded securities through transferable receipts that documented company ownership.<sup>32</sup> By the late 1800s, paper stock certificates had evolved into fully negotiable instruments that embodied complete equity rights and could be transferred without any involvement from the issuing company.<sup>33</sup> When the 1960s “paperwork crisis” overwhelmed physical certificate systems, the financial industry transitioned to indirect holding through intermediaries.<sup>34</sup> While physical certificates persist in depositories, Article 8 of the UCC creates property rights through “security entitlements,” preserving tokenization without requiring physical document transfers.<sup>35</sup>

A final example would be bills of lading and warehouse receipts under Article 7 of the UCC.<sup>36</sup> These items tokenize rights in goods during transport

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<sup>30</sup> See Financial Collateral, *supra* note 20, at 13.

<sup>31</sup> Clive M. Schmitthoff, *The Origin of the Joint-Stock Company*, 3 U. TORONTO L.J. 74, 76-79 (1939); *The Fascinating 600-Year History of a French Mill, the World’s Oldest Shareholding Company*, YALE SCH. OF MGMT.: INT’L CTR. FOR FIN. (Aug. 19, 2014), <https://som.yale.edu/news/2014/08/the-fascinating-600-year-history-of-french-mill-the-world-s-oldest-shareholding-company>.

<sup>32</sup> See Henry Hansmann & Mariana Pargendler, *The Evolution of Shareholder Voting Rights: Separation of Ownership and Consumption*, 123 Yale L.J. 948, 1002 (2014); Lodewijk Petram, *The Oldest Share*, THE WORLD’S FIRST STOCK EXCH. (Nov. 2, 2020), <https://www.worldfirststockexchange.com/2020/11/02/the-oldest-share/>; John P. Shelton, *The First Printed Share Certificate: An Important Link in Financial History*, 39 BUS. HIST. REV. 391, 397-99 (1965).

<sup>33</sup> See Financial Collateral, *supra* note 20, at 14; Shelton, *supra* note 32, at 392-93.

<sup>34</sup> See *In re Appraisal of Dell Inc.*, No. 9322, 2015 WL 4313206, at \*1 (Del. Ch. July 30, 2015); Wyatt Wells, *Certificates and Computers: The Remaking of Wall Street, 1967 to 1971*, 74 BUS. HIST. REV. 193, 200-01 (2000); The paperwork crisis led to the creation of centralized depositories like the Depository Trust Company (“DTC”) and a shift toward immobilized securities with beneficial ownership transferred through book entries. See James Steven Rogers, *Policy Perspectives on Revised U.C.C. Article 8*, 43 UCLA L. REV. 1431, 1442 (1996). This transformation required new legal frameworks: the 1978 UCC Article 8 revisions addressing uncertificated securities proved inadequate for the emerging indirect holding system, leading to the more comprehensive 1994 Article 8 revision adopted by all U.S. states. *Id.* The 2022 UCC amendment included updates to some of the comments to Article 8. See, e.g., U.C.C. § 8-102 cmt. 9.

<sup>35</sup> See generally Jeanne L. Schroeder, *Is Article 8 Finally Ready This Time? The Radical Reform of Secured Lending on Wall Street*, 1994 COLUM. BUS. L. REV. 291; see also James Steven Rogers, *Policy Perspectives on Revised U.C.C. Article 8*, 43 UCLA L. REV. 1431, 1451 (1996).

<sup>36</sup> U.C.C. §§ 7-101 to 7-110 (Am. L. Inst. & Unif. L. Comm’n 2003); U.C.C. § 1-201(b)(6), (16) (Am. L. Inst. & Unif. L. Comm’n 2022).

and storage.<sup>37</sup> Negotiable bills of lading allow carriers to deliver goods to whomever holds the document.<sup>38</sup> In doing so, it solves the problem of remote trade between unfamiliar parties by enabling sellers to retain constructive control over goods while they are in transit to the distant buyer.<sup>39</sup> Warehouse receipts similarly tokenize stored goods by allowing the transfer of ownership of the goods to occur without physical movement of the underlying items themselves.<sup>40</sup>

What emerges from this brief foray into commercial and property law history is that successful tokenization has invariably required the creation and development of standardized and mandatory legal frameworks.<sup>41</sup> These legal devices evolved organically over centuries, from cardinal common law decisions like *Lickbarrow v. Mason*, which recognized bills of lading as documents of title, through codification in comprehensive statutory schemes like the Uniform Commercial Code, and onward through successive refinements of these instruments.<sup>42</sup>

Tokenizations operate at what Thomas Merrill and Henry Smith describe as the “property/contract interface” by combining contractual and proprietary elements.<sup>43</sup> Parties enjoy extensive freedom in shaping the contractual aspects of these arrangements, such as service details, payment amounts, timing, and other economic terms. By contrast, they are subject to strict constraints on the property-based dimensions.<sup>44</sup> First, property law limits what types of personal property can be tokenized.<sup>45</sup> For instance, payment rights can be embodied in negotiable instruments and goods in transit can be embodied in bills of lading, but one cannot create novel categories at will. Second, where tokenization is permitted, the law imposes mandatory requirements regarding both form and substance of the instrument itself.<sup>46</sup> This ensures that anyone encountering a

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<sup>37</sup> See Miller, *supra* note 22, at 127; see also RALPH H. FOLSOM ET AL., PRINCIPLES OF INTERNATIONAL BUSINESS TRANSACTIONS 201–03 (4th ed. 2017).

<sup>38</sup> See U.C.C. § 7-309(a) (Am. L. Inst. & Unif. L. Comm’n 2003); Federal Bills of Lading Act (Pomerene Act), ch. 415, 39 Stat. 538 (1916) (codified as amended at 49 U.S.C. §§ 80101-80116); *Document of Title*, *Black’s Law Dictionary* (11th ed. 2019).

<sup>39</sup> See Miller, *supra* note 22, at 130–31; see also Folsom et al., *supra* note 37, at 7, 9, 203.

<sup>40</sup> See U.C.C. § 1-201(b)(42) (Am. L. Inst. & Unif. L. Comm’n 2022) (defining warehouse receipt as “a document of title issued by a person engaged in the business of storing goods for hire”); see also 4 CAL. TRANSACTIONS FORMS—BUS. TRANSACTIONS § 28:1 (2024); *Financing Inventory Through Field Warehousing*, 69 Yale L. J. 663, 664 (1960).

<sup>41</sup> See, e.g., Read, *supra* note 17, at 440. See Holdsworth, *supra* note 17, at 12–13; Aronstein, *supra* note 23, at 273.

<sup>42</sup> *Lickbarrow v. Mason* (1787) 2 T.R. 63 (KB).

<sup>43</sup> Merrill & Smith, *supra* note **Error! Bookmark not defined.**, at 773.

<sup>44</sup> See *id.*

<sup>45</sup> See generally Moringiello & Odinet, *supra* note 7. See generally Odinet & Tosato, *Structured Finance*, *supra* note 7.

<sup>46</sup> See, e.g., U.C.C. § 3-104.

tokenized instrument can rely on its standardized legal operation.<sup>47</sup> The stark divide between contractual flexibility and property law rigidity proves crucial for understanding why modern digital tokenization schemes often fail to achieve their stated objectives—they assume technological capability alone can create legal authority.<sup>48</sup>

## B. 2022 UCC Innovations

The 2022 amendments to the Uniform Commercial Code mark a pivotal moment in American law’s approach to digital assets. These amendments create the new personal property category of *controllable electronic records* (CERs) and establish two narrow pathways for the tokenization of payment rights. As we explain in this subpart, the 2022 amendments demonstrate how genuine tokenization emerges through explicit legal recognition rather than technological innovation alone.

### 1. The CER Framework

Article 12 of the 2022 UCC Amendments introduces CERs as “a record stored in an electronic medium that can be subjected to control.”<sup>49</sup> This definition has three essential components. First is the *record*: information retrievable in perceivable form.<sup>50</sup> The second is that the record must be *electronic*: derived from any digital technology.<sup>51</sup> And lastly, it must be capable of *control*: the key limiting factor.<sup>52</sup> While the first two components would encompass virtually all digital content, the final element of control limits the category by requiring three specific powers.<sup>53</sup>

First, a person must hold the power to “avail themselves of substantially all the benefit from the electronic record.”<sup>54</sup> For Bitcoin, for example, this means holding and transferring the asset.<sup>55</sup> Second, a person must have the ability to

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<sup>47</sup> Andrea Tosato & Christopher K. Odet, *Digital Assets and the Property Question*, FLA. L. REV. 41 (forthcoming 2026), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=5151907](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5151907).

<sup>48</sup> See *Tokenization: Opening Illiquid Assets to Investors*, BNY MELLON: INSIGHTS (June 2019), <https://perma.cc/2H5M-EQEN>; Katy Burne, *Tokens of Appreciation?: The Benefits of Digitizing Assets Using Blockchain*, BNY MELLON: *Aerial View Mag.* (Feb. 2020), <https://perma.cc/6N7M-BXL7>; Patrick Laurent et al., *The Tokenization of Assets Is Disrupting the Financial Industry. Are You Ready?*, DELOITTE: *Inside Mag.*, Oct. 2018, at 62, <https://perma.cc/D37Q-PT4R>.

<sup>49</sup> U.C.C. § 12-102(a)(1) (Am. L. Inst. & Unif. L. Comm’n (2022)).

<sup>50</sup> U.C.C. § 1-201(b)(31).

<sup>51</sup> U.C.C. § 1-201(b)(16A).

<sup>52</sup> U.C.C. § 12-105(a)(1).

<sup>53</sup> See *id.*

<sup>54</sup> U.C.C. § 12-105(a)(1)(A).

<sup>55</sup> See Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, <https://bitcoin.org/bitcoin.pdf>.

“prevent others from availing themselves of substantially all the benefit”—a factual determination of exclusionary power that is achieved, for example, by holding the private key that pairs with a Bitcoin’s public address.<sup>56</sup> Third and lastly, the person must possess the ability to transfer both of the aforementioned powers to another person and that transferee must equally be able to transfer these powers onward.<sup>57</sup> Thus, CERs represent a functional approach to digital property that emphasizes operational characteristics over traditional common law categories. It focuses on the key distinguishing feature of direct control, without the need for intermediaries.<sup>58</sup>

## 2. Limited Tokenization for Payment Rights

The 2022 Amendments establish two narrow avenues for tokenizing payment rights using CERs: *controllable accounts* and *controllable payment intangibles*.<sup>59</sup> Building upon pre-existing categories found in Article 9 of the UCC, a controllable account is an “account” evidenced by a CER and in respect of which the *account debtor* agrees to pay the person in control of that CER.<sup>60</sup> Coextensively, a controllable payment intangible is a “payment intangible” evidenced by a CER as to which the obligor undertakes to pay the person in control of that CER.<sup>61</sup>

These definitions perform a statutory merger, fusing the intangible payment right into the CER. Additionally, controllable accounts and controllable payment intangibles benefit from Article 12’s comprehensive regime for CERs, including protections for “qualifying purchasers” who obtain control for value, in good faith, and without notice of competing claims.<sup>62</sup> The 2022 Amendments further allow debtors of controllable account and controllable payment intangibles to waive claims or defenses against subsequent transferees.<sup>63</sup> Together, these provisions effectively create electronic negotiable instruments, granting CERs that evidence monetary obligations the same negotiability traditionally reserved for paper instruments.<sup>64</sup>

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<sup>56</sup> U.C.C. § 12-105(a)(1)(B)(i).

<sup>57</sup> U.C.C. § 12-105(a)(1)(B)(ii).

<sup>58</sup> For a full treatment of this argument, *see generally* Tosato & Odinet, *supra* note 47.

<sup>59</sup> U.C.C. § 9-102(a)(27A), (27B). *See also* Andrea Tosato, Diane Lourdes Dick, & Christopher K. Odinet, *Debt Tokens*, 173 U. PA. L. REV. 1103, 1158 (2025) (providing an exhaustive analysis of the “controllable accounts”); Julia Patterson Forrester Rogers, *eMortgage and Crypto-Mortgage in Home Finance*, 52 PEPP. L. REV. 1, 36-41 (2025) (providing an analysis of “controllable payment intangibles”).

<sup>60</sup> U.C.C. § 9-102(a)(2), (27a) (defining “account” and “controllable account”).

<sup>61</sup> U.C.C. § 9-102(a)(61), (27b) (defining “payment intangible” and “controllable payment intangible”).

<sup>62</sup> U.C.C. § 12-102(a)(2) (defining “qualifying purchaser”); § 12-104(g) (take-free provisions); *see also* Rogers, *supra* note 59 at 36-41.

<sup>63</sup> *See* U.C.C. § 9-403(b).

<sup>64</sup> *See* U.C.C. § 12-104 cmt. 10; *see also* Tosato, Dick, & Odinet, *Debt Tokens*, *supra* note 59, at 1152.

Article 12’s framework for controllable accounts and controllable payment intangibles illuminates two key tenets of tokenization.<sup>65</sup> First, tokenization emerges not from technological innovation but from explicit legal recognition. While DLT systems can create digital tokens purporting to represent various claims and rights, only law can transform these technological artifacts into enforceable instruments. This echoes a historical pattern: negotiable instruments, stock certificates, and bills of lading all required statutory or common law recognition before they became enforceable legal devices.<sup>66</sup> Without such investiture, digital assets remain mere technological experiments rather than dependable legal instruments.

Second, the law always carefully delimits the categories of rights that are eligible for tokenization. Article 12 does not create a general-purpose mechanism for digital tokenizations. CERs can embody only “accounts” and “payment intangibles,” not any asset a software developer might choose. This narrow scope confirms that tokenization remains extraordinary in property and commercial law. The law is inherently cautious about allowing rights to be embodied into tokens because market participants expect to deal with assets directly, not through intermediary instruments that purport to represent them.

## II. OWNERSHIP OF REAL PROPERTY THROUGH DIGITAL ASSETS

With that background, here we test this crypto market assertion: namely, the idea of using a digital asset as a conduit for directly owning an interest in real property. This is, at its core, an issue of tokenization. The fundamental question is whether a digital asset can embody ownership rights in real property, thereby entitling the token owner to the corresponding real property rights. As we explained in Part I, tokenization cannot be conjured out of thin air by contract. Rather, the law must sanction tokenization. There are two sources of law that could potentially serve as the foundation for tokenization in this context: *commercial law* and *property law*. As we will explain in the following pages, the first does not provide the necessary support for what many crypto proponents claim. The second can only do so under highly contingent and uncertain circumstances that, ultimately, only add more transaction costs and procedural steps to the real estate transaction.

### *A. Exploring the Proper Legal Framework*

When it comes to **commercial law**, and the UCC specifically, the tokenization of real estate using digital assets is simply not possible. As we

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<sup>65</sup> See Giuliano G. Castellano and Andrea Tosato, *Commercial Law Intersections*, 72 HASTINGS L.J. 999, 1041–1042 (2021) (defining key tenets as “the dispositive rules and principles that articulate the legal framework necessary to realize the policy aims of a commercial law branch”).

<sup>66</sup> See *supra* Part I.A and accompanying discussion.

explained in Part I, Article 12 provides for only two types of tokenizations through a CER: *controllable accounts* and *controllable payment intangibles*. Entitlements in and to real property are not included, and this exclusion is unsurprising given that such interests fall outside the scope of the UCC entirely. Indeed, the Prefatory Note to Article 12 expressly states that, in general, “law other than Article 12 would govern what steps must be taken or conditions must be satisfied for a person to acquire an interest in a controllable electronic record and the rights, if any, that the person acquires in *other property* . . . as a result of acquiring an interest in the record.”<sup>67</sup>

In looking to such “other law,” we naturally turn to **property law**. Yet, this domain presents only the most narrow and fraught path for such tokenization. To understand why, one must first understand the fundamental concept of *title* in American private law. As Rufford Patton and Joyce Palomar’s seminal treatise on land titles defines it: “title means the right to or ownership of property.”<sup>68</sup>

When it comes to real estate transactions, voluntary, *inter vivo* transfers of title are effectuated through the instrument known as a deed of conveyance— “[a] written instrument by which land is conveyed.”<sup>69</sup> Importantly, every American jurisdiction has enacted a statute of frauds that requires each conveyance of an interest in land (with some exceptions, like short-term leases) to be in writing.<sup>70</sup> Under traditional statute of frauds requirements, a digital asset alone cannot possibly serve as a vehicle for embodying or conveying title to real property, as a digital asset is a form of electronic record while a deed traditionally requires a physical written document.<sup>71</sup>

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<sup>67</sup> UCC Article 12 Prefatory Note 4.b (emphasis added).

<sup>68</sup> PATTON ON LAND TITLES § 1, at 2 (1st ed. 1938). Heather Way describes title as “a legal construct that defines” the rights held by someone in a particular asset. See Heather K. Way, *Informal Homeownership in the United States and the Law*, 29 ST. LOUIS U. PUB. L. REV. 113, 120 (2009).

<sup>69</sup> *Deed*, *Black’s Law Dictionary* (12th ed. 2024).

<sup>70</sup> Dale A. Whitman, Ann M. Burkhart, R. Wilson Freyermuth & Troy A. Rule, *The Law of Property* 701–02 (11<sup>th</sup> ed. 2022).

<sup>71</sup> For a discussion of whether computer code could be sufficient to satisfy the statute of frauds, see Justin Lischak Earley, *Bear With Me: The Bearer-Asset Dangers of Tokenizing Real Estate*, THE PRAC. REAL EST. LAW. Jan. 2024, at 29 & n.35 (“[O]ne might argue that at least some portion of the ‘in writing’ requirement seems to serve a public-notice function such that non-parties to the transaction (such as judges) can interpret the transaction.”). Earley observes that Blackstone seems to take for a given that any “language” will suffice for purposes of satisfying the Statute of Frauds. See 2 William Blackstone, *Commentaries on the Land of England* 203, para. 297: “[T]he deed must be written . . . it may be in any character or language.”). Yet, at the same time, Blackstone also seems to assume that any such “languages” would be interpretable by attorneys. *Id.*

### B. *The Law of Electronic Transactions*

Yet, this is not the end of the story. At the turn of the 21<sup>st</sup> century, there was growing recognition that an increasingly large number of transactions, both commercial and consumer in nature, were becoming electronic. To facilitate this transition, Congress passed the Electronic Signatures in Global and National Commerce Act in 2000, commonly known as the “E-Sign” Act.<sup>72</sup> This legislation marked a significant shift in legal thinking about transactions. At its core, the E-Sign Act provided that no signature or contract could be denied legal effect simply because it existed in electronic form.<sup>73</sup> This effectively overrode state laws that might have otherwise hampered electronic commerce, such as various statutes of fraud that required certain kinds of contracts to be *physically* in writing.

In parallel with this federal law, the ULC introduced the Uniform Electronic Transactions Act (“UETA”).<sup>74</sup> This legislation provided states with a blueprint for embracing electronic transactions by offering comprehensive guidelines for recognizing electronic records, signatures, and related matters.<sup>75</sup> UETA explicitly provides that electronic records satisfy any legal requirements for written documents, and electronic signatures fulfill any statutory signature requirements.<sup>76</sup> Additionally, going further than the E-Sign Act, UETA changed the role of notaries in real estate transactions by permitting them to perform their duties electronically, thereby eliminating the need for physical stamps or seals.<sup>77</sup>

These legislative reforms effectively removed the barrier of physical form, permitting electronic records to satisfy traditional writing requirements. Returning then to the main thread of our Essay, this development theoretically opens the possibility for digital assets, including non-fungible tokens (NFTs), to serve as deeds. Such an interpretation is reinforced by the 2022 UCC Amendments which, as explained in Part I, recognize many of these digital assets as CERs and, therefore, as “electronic records.”<sup>78</sup> However, establishing that a digital asset can fulfill the format of a deed is distinct from ensuring it meets the substantive legal requirements necessary to actually convey real property rights—a crucial distinction we explore in the discussion that follows.

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<sup>72</sup> *Electronic Signatures in Global and National Commerce Act*, Pub. L. No. 106-229, 114 Stat. 464 (2000) (codified at 15 U.S.C. §§ 7001–7031 (2023)).

<sup>73</sup> *Id.* § 101(a), 114 Stat. at 465 (codified at 15 U.S.C. § 7001(a) (2023)).

<sup>74</sup> *Unif. Elec. Transactions Act* (Unif. L. Comm’n 1999).

<sup>75</sup> *See generally id.*

<sup>76</sup> *Id.* §§ 7, 9.

<sup>77</sup> *Id.* § 11.

<sup>78</sup> *See supra* Part I.B.1.

### C. Technical Requirements for Digital Deeds

The mere possibility of using an electronic record as a deed does not mean that a CER automatically embodies the rights in real estate. Most statutes of frauds for the conveyance of real estate require, at a minimum, that the deed describe the property to be conveyed, contain the signature of the grantor, and that the identity of the grantee be ascertainable from the instrument.<sup>79</sup> The property description can readily be provided in the metadata of the CER, and this will most likely remain static from transfer to transfer. However, the identities of the parties and the signature of the grantor may present complications, since these elements will change with each transaction (in other words, each time the property is transferred the buyer and seller's names will change). Under property law, "[t]he deed must name the grantor in the granting clause"<sup>80</sup> and "[a] deed which does not name or in some manner designate a grantee is inoperative to convey the legal title."<sup>81</sup>

One could envision a CER that identifies in its metadata the name of the grantor and the grantee, along with the proper legal description of the property being conveyed. The grantor would then transfer control of the CER to the grantee, thereby ostensibly delivering the CER deed and causing title to the property to pass just as with the delivery of a paper deed.<sup>82</sup> The "signature of the party to be bound"<sup>83</sup> requirement would arguably be met by the grantor using their private key to "sign" the authorization for the digital asset to be transferred.<sup>84</sup> This should legally suffice since UETA defines an "electronic signature" as any "electronic sound, symbol, or process attached to or logically associated with a record and executed or adopted by a person with the intent to sign the record."<sup>85</sup> The use of the private key would arguably be such an *electronic process* that is logically associated with a *record* (the NFT deed) and *adopted* by the grantor with the *intent to sign* it.

But, having so accomplished this task, the mere transfer of the NFT to a then subsequent purchaser would not make this transferee the owner of the real

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<sup>79</sup> See, e.g., 5A *Tex. Jur. Pl & Pr. Forms* § 93:1 (2d ed.); PATTON AND PALOMAR ON LAND TITLES § 334 (3d ed.) ("Regardless of the name or form of modern conveyances, they still will consist of some or all of the following formal parts, namely: premises, habendum and tenendum, reddendum, conditions, restrictions, covenants and warranties, and the conclusion.").

<sup>80</sup> 5A *Tex. Jur. Pl & Pr. Forms* § 93:2 (2d ed.).

<sup>81</sup> See *Roeser & Pendleton v. Stanolind Oil & Gas Co.*, 138 S.W.2d 250, 252 (Tex. Civ. App. 1940), writ refused.

<sup>82</sup> See 18 *Mo. Prac., Real Estate Law—Transact. & Disputes* § 3:16 (3d ed.) ("Delivery is the breath of life that permits acceptance and effectiveness of an otherwise valid deed."); 4 *Tiffany Real Prop.* § 1034 (3d ed.); 2 *Cal. Real Est. Digest* 3d Deeds § 8.

<sup>83</sup> Patton and Palomar, *supra* note 79, § 334.

<sup>84</sup> For a discussion of public addresses, private keys, and digital wallets, see Christopher K. Odinet & Andrea Tosato, *Floating Liens over Crypto-in-Commerce*, 99 *IND. L. J.* 367, 387 (2023).

<sup>85</sup> UETA § 2(8) (emphasis added).

estate. This is because the listed parties in the metadata of the NFT would still be the original grantor and grantee. To effectuate a new, subsequent transfer using that same CER as a new deed, one would need to alter this metadata to reflect the new grantee, as well as the new grantor and their electronic signature—all of which are modifications that might or might not be possible depending on the design of the digital asset in question. To be clear: we make these observations not to show that using digital assets as deeds in this fashion is impossible, but rather to explain how current title transfer rules (specifically, deed requirements) do not allow for the CER to operate as a “bearer instrument”<sup>86</sup> whereby mere control of the CER automatically confers ownership of the underlying real estate.

#### *D. Title Assurance and Digital Deed Intersections*

But where current law appears to narrowly allow for the use of a CER as an instrument of conveyance (i.e. a deed), the law of title assurance throws up yet more roadblocks. Title assurance laws blend common law doctrines and statutory regimes that impart legal recognition of title and make title-related information readily available for public inspection.<sup>87</sup> This system ensures that title is relatively certain, as well as establishes priority among competing interests in the same property. Without accompanying title assurance, a deed-based title can be rendered worthless.<sup>88</sup>

##### *1. The Role and Evolution of Title Protection*

Historically, the English law method for conveying interests in land lacked formal recording because such transfers were infrequent.<sup>89</sup> Moreover, as the populace was largely illiterate, written records would have been of little utility. Instead, parties conducted a solemn ceremony known as *enfeoffment*, involving the symbolic transfer of a twig, dirt, or similar item, accompanied by the grantor’s spoken declaration of intent to transfer and witnessed by multiple

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<sup>86</sup> See *Deutsche Bank Nat’l Tr. Co. v. Campbell*, 2018 IL App (1st) 170817-U, ¶ 19. For a discussion of crypto proponents’ false notions of bearer assets in real estate, see Earley, *supra* note 6, at 25.

<sup>87</sup> See Gerald Korngold, *Resolving the Intergenerational Conflicts of Real Property Law: Preserving Free Markets and Personal Autonomy for Future Generations*, 56 AM. U. L. REV. 1525, 1564 (2007).

<sup>88</sup> For a brief history of title assurance in England and the United States, see M. Moringiello & Christopher K. Odinet, *Blockchain Real Estate and NFTs*, 64 WM. & MARY L. REV. 1131, 1140–43 (2023).

<sup>89</sup> 14 *Powell on Real Property* § 82.01; see also Claire Priest, *Credit Nation: Property Laws and Legal Institutions in Early America 166–68* (Joel Mokyr ed. 2021) P.H. Marshall, *A Historical Sketch of the American Recording Acts*, 4 CLEV.-MARSHALL L. REV. 56, 56–57 (1955).

observers.<sup>90</sup> Thereafter, any subsequent attempts by the grantor to transfer the same property to someone else would be ineffective, since the rule was that the first transfer prevailed over any subsequent ones (or, said another way, the *nemo dat* rule prevented the grantor from making the subsequent transfer of the same land because the grantor no longer had any interest to subsequently convey).<sup>91</sup>

However, as commercial real estate transactions became more frequent, mortgage finance markets developed, and there was an economic rise in the merchants class, the law began to move away from the twig and turf ceremony.<sup>92</sup> In 1535, the English Parliament passed the Statute of Uses,<sup>93</sup> allowing conveyances without enfeoffment. Moreover, the Statute of Enrolments, enacted concurrently with the Statute of Uses partly to counter secret transfers and tax avoidance, mandated public filings to evidence the conveyance of certain estates in land.<sup>94</sup> Finally, with the passage of the Statute of Frauds in 1677,<sup>95</sup> a written document became broadly required to transfer title to real property.<sup>96</sup>

In America, several colonies began experimenting with written records of land ownership in the 1600s.<sup>97</sup> In what some historians consider the fountainhead of modern recording acts, the General Court of Massachusetts Bay enacted an ordinance in October 1640 aimed at preventing fraudulent conveyances.<sup>98</sup> In the interest of creating a system such that “every man may know what estate or interest other men may have in any houses, lands, or other hereditaments they are to deale in [sic],”<sup>99</sup> the new law required certain transfers of interests in real property to be recorded in the records of the court. These instruments required acknowledgement by some kind of public officer, and once recorded, created an order of priority of rights in the same property among

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<sup>90</sup> SHELDON F. KURTZ, HERBERT HOVENKAMP, CAROL NECOLE BROWN, & CHRISTOPHER K. ODINET, *CASES AND MATERIALS ON AMERICAN PROPERTY LAW* (7<sup>th</sup> ed. 2019).

<sup>91</sup> Powell, *supra* note 89, § 82.01.

<sup>92</sup> *See id.*

<sup>93</sup> 27 Hen. 8, c. 10. (1535).

<sup>94</sup> *Id.*

<sup>95</sup> 29 Charles 2, c. 3, § 1 (1677).

<sup>96</sup> For a more complete discussion of the statute and its background, see Wright, *Legal Essays and Addresses* 225-26 (Cambridge Univ. Press 1939).

<sup>97</sup> *See* Powell, *supra* note 89, § 82.01. Prior to 1640, Virginia, Plymouth, Rhode Island, and Connecticut all enacted legislation dealing with land recording. *See* George L. Haskins, *The Beginnings of the Recording System in Massachusetts*, 21 B.U. L. REV. 281, 284 (1941); 1 PATTON AND PALOMAR ON LAND TITLES § 4 (3d ed.). In fact, some colonies had already been introduced to it by the European colonial powers (like in New York due to Dutch influence). *See* Haskins, *supra*, at 284.

<sup>98</sup> *See* Haskins, *supra* note 97, at 282–83.

<sup>99</sup> *Records of the Governor and Company of the Massachusetts Bay in New England*, 306-07 (N. B. Shurtleff ed., 1853); Haskins, *supra* note 97, at 282–83.

multiple grantees. By the time of the American Revolution, all of the English colonies had some form of recording system for conveying rights in realty.<sup>100</sup>

Later, as the United States expanded westward, the influence of these colonial recording acts grew.<sup>101</sup> This evolution eventually produced the three primary recording systems in use today: race, race-notice, and notice.<sup>102</sup> In notice and race-notice jurisdictions, the *nemo dat* rule is subject to a key exception: a subsequent bona fide purchaser who acquires an interest in land for value and without notice of a prior interest in that same land will prevail (provided, in a race-notice jurisdiction, they also record first). In the race system, the prevailing party is the first to record their instrument and pay value.

Regardless of the system, the underlying principles of title assurance remain consistent. As the famous Peruvian economist Hernando DeSoto described, the land recording systems make property “standardized . . . accountable . . . [and] functional.”<sup>103</sup> They are, in short, a “public memory system[]” that take the form of “rule-bound . . . and publicly accessible registries.”<sup>104</sup>

Yet, the aim of the recording acts is not only to “favor the creation of clear and reliable property interests, while disfavoring ambiguous or contested ownership interests.”<sup>105</sup> It is also to “facilitate[] the creation of secure title interests by insuring a property owner from third party claims to the property.”<sup>106</sup> Joseph Singer explains that, while recording is not necessary for the transaction to be effective between the parties, it “is essential to provide an official record of the state of the title” as well as “to protect the buyer against any competing claims that may be created by the grantor in others.”<sup>107</sup> The act of recording, combined with the public nature of the registry itself, puts “buyers on notice of prior claims or limits on land use rights.”<sup>108</sup>

Beyond buyers, the recording system serves multiple constituencies, such as borrowers, lenders, those with leasehold interests, title insurance firms,<sup>109</sup> government entities, judgment creditors, those entitled to statutory liens, and many more.<sup>110</sup> For example, before leasing property or lending against real

<sup>100</sup> PATTON & PALOMAR, *supra* note 97, § 4.

<sup>101</sup> Powell on Real Property § 82.01.

<sup>102</sup> Kurtz et al., *supra* note 90, § 15.3.1, at 1370–71.

<sup>103</sup> INSTITUTE FOR LIBERTY AND DEMOCRACY, *Hernando de Soto's speech at the IBA 2008 (Part 3)*, at 00:34 (YouTube, June 29, 2010), <https://www.youtube.com/watch?v=gTqrcylb18Y>.

<sup>104</sup> Hernando de Soto, *The Destruction of Economic Facts*, BLOOMBERG BUS. WK., May 2, 2011, at 60.

<sup>105</sup> See Way, *supra* note 68, at 121.

<sup>106</sup> *Id.*

<sup>107</sup> See Joseph William Singer, *Property* § 11.4.5 (2014).

<sup>108</sup> *Id.* § 11.4.5.

<sup>109</sup> For a discussion of the role of abstracts, title opinions, and title insurance companies, see PATTON & PALOMAR, *supra* note 97, §§ 41–54.

<sup>110</sup> Donald J. Kochan, *Certainty of Title: Perspectives After the Mortgage Foreclosure Crisis on the Essential Role of Effective Recording Systems*, 66 ARK. L. REV. 267, 275–76 (2013).

estate, one would want to know the state of title. Who actually owns the property? What other interests exist, whether owner-granted (easements, covenants, leaseholds) or law-imposed (judgment or statutory liens)?

## 2. *The Challenge of Digital Deed Recording*

Circling back to the central inquiry of this Essay, the crucial role of the public records in title assurance systems exposes a fundamental vulnerability for the direct tokenization of real estate model. One may indeed acquire an interest in real property through a digital asset that functions as a deed, but without the ability to record it, title is not assured under the recording acts. This means that the same person who conveyed the NFT deed to the grantee may subsequently convey that same property again through a written deed to another grantee. And, in accordance with the rules of the relevant recording act, the second grantee may very well prevail. Avoiding this outcome requires a method for recording the digital asset.

To be sure, there have been efforts to establish an electronic land recording system.<sup>111</sup> The push for such reform gained momentum after the promulgation of UETA and the E-Sign Act and was further highlighted by the havoc of the 2008 mortgage crisis. Moreover, several scholars denounced the indexing challenges inherent in systems relying on human document handlers to maintain searchable records for property title research.<sup>112</sup>

As a result, electronic recording has made some progress. Thirty-nine U.S. jurisdictions have enacted the Uniform Real Property Electronic Recording Act, promulgated by the ULC in 2004.<sup>113</sup> This uniform act deems any legal requirement for original, paper, or manually-signed documents to be satisfied by electronic documents.<sup>114</sup> It also establishes an Electronic Recording Commission to set statewide electronic recording standards, while giving local offices the authority to automate recording procedures.<sup>115</sup>

Yet, the adoption of this uniform act in a jurisdiction does not mean that every recording office (all of which exist and operate on a county-by-county

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<sup>111</sup> Moringiello & Odinet, *supra* note 88, at 1171.

<sup>112</sup> See Tanya Marsh, *Foreclosures and the Failure of the American Land Title Recording System*, 111 COLUM. L. REV. SIDEBAR 19, 21–24 (2011); Dale A. Whitman, *Are We There Yet? The Case for a Uniform Electronic Recording Act*, 24 W. NEW ENG. L. REV. 245, 246–50 (2002).

<sup>113</sup> See *Project Page for Real Property Electronic Recording Act, Uniform Law Commission*, <https://www.uniformlaws.org/committees/community-home?communitykey=643c99ad-6abf-4046-9da4-0a6367da00cc>, <https://perma.cc/R9CU-9MQ8>.

<sup>114</sup> *Uniform Real Property Electronic Recording Act* § 3 (Unif. L. Comm'n 2004).

<sup>115</sup> *The Uniform Real Property Electronic Recording Act: A Summary*, UNIFORM LAW COMMISSION, <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=3be821b4-d463-170c-000d-ae0bd9ee5e6d&forceDialog=0>.

basis) has implemented the technology for electronic deed recording. As of February 2023, roughly 30 percent of the approximately 3,600 recording jurisdictions in the United States still lacked e-recording capabilities.<sup>116</sup> Even within the 70 percent of jurisdictions where e-recording is permissible, significant practical barriers prevent the recording of a digital asset like an NFT.<sup>117</sup> The standard e-recording system, as the American Land Title Association explains, is quite simple (perhaps one can say primitive) by simply processing a scanned digital image of a deed transmitted through a secure portal.<sup>118</sup> The county recorder receives this image, stamps it, and returns a confirmation.<sup>119</sup> To record a digital asset deed, one would have to transmit its metadata in a format compatible with the county's e-recording portal—something that is yet unfamiliar to American recording offices.

### III. THE PRIVATE LAW REALITY OF TOKENIZED REAL ESTATE

The preceding discussion has shown that the adoption of digital assets and DLT systems in real estate transactions creates legal complications at multiple junctures. The promised simplifications and efficiencies prove at best to be non-existent or at worse to be a dangerous mirage when examined through a private law lens. This final Part III articulates the private law implications of the direct tokenization of real estate interests.

#### *A. The Impossibilities*

The central flaw in the concept of tokenizing real estate rights is its assumption that real estate interests can be embodied in bearer-like instruments (whether physical or digital) that pass ownership through simple transfer of the item itself. This assumption fundamentally misunderstands American property law.

As examined in Part II, every American jurisdiction has enacted statutes of frauds requiring conveyances of interests in land to be in writing, with deeds requiring specific formal elements including property descriptions, grantor signatures, and ascertainable grantees. More critically, property law does not permit the creation of bearer instruments for real estate. Unlike documents of

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<sup>116</sup> See Property Records Indus. Ass'n (PRIA), *PRIA Technology Resources* (Dec. 12, 2025), <https://pria.us/resources/pria-technology/>, <https://perma.cc/C6GC-WMFX>; Number of E-recording Enabled Jurisdictions Passes 2,000, ALTA (Aug. 20, 2019), <https://www.alta.org/news-and-publications/news/20190820-Number-of-E-recording-Enabled-Jurisdictions-Passes-2000>, <https://perma.cc/6F2W-KGBV>.

<sup>117</sup> Am. Land Title Ass'n., *The Basics of E-recording* (2019), <https://blog.alta.org/2019/06/the-basics-of-e-recording.html>, <https://perma.cc/K7Q9-MA3W>; Juliet M. Moringiello & Christopher K. Odinet, *The Property Law of Tokens*, 74 FLA. L. REV. 607, 670 (2022).

<sup>118</sup> Am. Land Title Ass'n, *supra* note 117.

<sup>119</sup> See *id.*

title under commercial law that can transfer ownership rights in specific goods through mere possession and delivery, real estate interests cannot be embodied in instruments that pass ownership through simple transfer alone. The idea that transferring the token from one digital wallet to another would effectuate legally recognized transfers of real property rights is simply not possible in law.

While perhaps contestable, we think that this restriction on tokenization reflects fundamental policy considerations that distinguish real estate from movable property and financial instruments. The immobile nature of real estate, its substantial value and central role in wealth creation and community stability, demand formalities, notice requirements, public recording systems, and fraud prevention mechanisms that are generally considered to be incompatible with the characteristics of bearer instruments.

And even where digital assets might technically satisfy deed requirements under electronic transaction laws (as we outlined above), the title assurance system creates practical barriers. As noted in Part II, the theoretical possibility of using digital assets as deeds does not translate into practical viability when confronted with recording requirements.

Additionally, the direct tokenization model also presents a fundamental dual ledger problem. Under this approach, a single property conveyance would generate two separate records: an NFT residing on the distributed blockchain ledger for technological functionality, and a corresponding entry in the county land records containing metadata representation for title assurance purposes (assuming recording offices possess the necessary technological infrastructure to receive and process such data). This bifurcated system would require dual title searches and create unprecedented coordination challenges between decentralized blockchain networks and centralized county recording systems. Rather than streamlining property transfers, this arrangement would compound existing procedural complexities while introducing additional layers of administrative requirements and potential failure points that could jeopardize transaction security and title clarity.

Perhaps most problematic, without the ability to record digital asset transfers in county land records, token holders remain vulnerable to competing claims. As we noted above in Part II.D, the same person who conveyed an NFT deed to a grantee may subsequently convey that same property again through a written deed to another grantee, and under recording act rules, the second grantee may very well prevail over the token holder.

Collectively, these issues all center on the belief that technological innovation can circumvent established legal frameworks. The current system of written deeds, public recording, and title assurance, while perhaps fairly described as overly intricate and even archaic, is a deliberate framework built over a long period to serve critical public functions. Allowing private parties to unilaterally create their own, multivariant property transfer mechanisms would cause legal chaos: third parties would face insurmountable uncertainty about ownership, courts would struggle to reconstruct chains of title, and the predictability essential to functioning real estate markets would collapse.

### *B. The Possibilities*

Having resisted the siren song of techno-solutionism,<sup>120</sup> we can now safely assess what the tokenization of real property rights can truly accomplish. While it cannot create the kind of bearer-like instruments envisioned by its most ambitious proponents, it can meaningfully improve the execution of real estate transactions. Building upon the statutory reforms examined in Part II, particularly the E-Sign Act and UETA, it is certainly possible to use digital assets as a form of conveyance instrument. Digital assets maintained on DLT networks offer clear advantages over paper-based systems: they eliminate physical storage requirements, enable instant transmission across vast distances, provide permanent and immutable records that cannot be lost or destroyed, and facilitate automated processing and verification. These benefits alone represent significant improvements over traditional paper-based deed systems.

Moreover, DLT systems offer meaningful improvements even over conventional electronic documents such as signed PDFs or centralized cloud-based signature services. The underlying distributed ledgers provide tamper resistance, ensuring that once recorded, deed information cannot be altered without detection. The decentralized nature of these networks eliminates single points of failure and reduces dependence on centralized service providers, potentially offering greater long-term reliability and accessibility. These characteristics could address some of the authenticity and integrity concerns that hinder traditional electronic document systems.

The greatest potential benefits, however, lie in future coalescence with electronic land registries. Complete integration between deeds in digital asset form and county recording systems using distributed ledger technology could theoretically yield substantial efficiency gains in execution time, cost reduction, and information accessibility. Such platforms could enable real-time title searches, automated compliance checking, and streamlined transfer processes that genuinely reduce transaction costs and timelines.

### *C. The Headwinds*

However, the practical realization of these benefits faces substantial obstacles. Most fundamentally, electronic recording system adoption remains incomplete across American jurisdictions. As discussed above, 30% of the nation's 3,600 recording jurisdictions have not implemented e-recording and therefore cannot accommodate electronic deeds of any kind. More significantly, no jurisdiction currently offers an electronic platform that natively integrates digital assets within its system.

These limitations reflect deeper systemic challenges inherent in American land recording infrastructure. These systems operate on a county-by-county

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<sup>120</sup> See generally Hilary J. Allen, *Fintech and Techno-Solutionism*, 98 S. CAL. L. REV. 761 (2025) (parenthetical).

basis, creating thousands of separate jurisdictions with varying technological capabilities, legal requirements, and administrative procedures. Implementing DLT-based deed systems would require coordinated upgrades, which would ostensibly entail costly and complex undertakings that demand policy changes and substantial public investment. While we have not conducted a comprehensive empirical analysis, our suspicion is that the cost-benefit calculus for such systems appears unfavorable when compared to existing electronic document solutions that can achieve many of the same efficiencies without requiring wholesale infrastructure replacement.

It should also be noted that security and fraud concerns present additional barriers that compound the authentication challenges inherent in electronic transactions. As title industry experts have noted, “the fact that there is legal support for what we are doing is only part of the battle.”<sup>121</sup> Digital asset systems must ensure that signers are correctly identified, that parties understand the documents they are executing, and that the technical infrastructure cannot be compromised or manipulated. Title insurers face expanded exposure to liability, as their policies must cover not only traditional risks but also issues related to improper execution, technical failures, and the validity of electronically created documents. Until these multifaceted barriers are addressed through significant public and private sector coordination, the benefits of the direct tokenization of real estate remain largely theoretical rather than practically achievable.

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<sup>121</sup> *E-mail, E-Sign, E-Notarize? Considerations Surrounding Electronic Real Estate Transactions*, VLTA EXAMINER Dec. 18, 2017), <https://vltaexaminer.com/2017/12/18/e-mail-e-sign-e-notarize-considerations-surrounding-electronic-real-estate-transactions/>, <https://perma.cc/S3WJ-FEJT>.