Washington and Lee Law Review

Volume 76 | Issue 2 Article 5

6-19-2019

A Commercial Law for Software Contracting

Michael L. Rustad
Suffolk University Law School, mrustad@suffolk.edu

Elif Kavusturan
Suffolk University Law School

A Commercial Law for Software Contracting

Michael L. Rustad[*] *and Elif Kavusturan*[**]

Table of Contents

* Michael L. Rustad is the Thomas F. Lambert Jr. Professor of Law and Co-Director of Suffolk University Law School's nationally ranked Intellectual Property Concentration. He is a member of the American Law Institute and served on the ABA Business Law Section's Subcommittee on Information Licensing. He was a Task Force Leader of the ABA Business Law Section's Subcommittee on software contracting, and served as Vice-Chair of the Subcommittee. His most recent book is *Global Information Technologies: Ethics and Law*, published by West Academic in 2018, with Thomas Koenig. He is the author of *Computer Contracts: Negotiating & Drafting,* a five volume treatise on computer contract law, published by Matthew Bender and updated twice annually. He is also author of the *Global Internet Hornbook* (3rd ed. 2019) and *Global Internet Law in a Nutshell* (4th ed. 2019).

** Elif Kavusturan is an information technology lawyer with more than a decade of work with computer contracts, who is currently a S.J.D. student at Suffolk University Law School.

I. Introduction

The American Law Institute (ALI) and the National Conference of Commissioners on Uniform State Laws (NCCUSL) approved the Uniform Commercial Code (U.C.C.) nearly seventy years ago.[1] The ALI and the NCCUSL approved the original U.C.C. and introduced the model statute in state legislatures throughout the United States.[2] "By 1949, the flexible contract rules of today's Code were largely in place."[3] Pennsylvania was the first state to enact the U.C.C., followed by Massachusetts in 1958.[4] "By 1966, 48

1. *See Uniform Commercial Code (UCC)*, DUKE L., https://law.duke.edu/lib/researchguides/ucc/ (last visited Apr. 3, 2019) (discussing the origins of the U.C.C.) (on file with the Washington and Lee Law Review).

2. *Id.*

> The U.C.C. text and draft revisions are written by experts in commercial law and submitted as drafts for approval to the National Conference of Commissioners on Uniform State Laws (referred to as the Uniform Law Commissioners), in collaboration with the American Law Institute. The Commissioners are all attorneys, qualified to practice law, including state and federal judges, legislators and law professors from throughout the United States and its territories. These quasi-public organizations meet and decide whether to endorse the drafts or to send them back to the experts for revision. The revision process may result in several different revisions of the original draft. Once a draft is endorsed, the Uniform Law Commissioners recommend that the states adopt these rules.

3. Allan R. Kamp, *Downtown Code: A History of the Uniform Commercial Code 1949–1954*, 49 BUFF. L. REV. 359, 372 (2001).

4. *See* Robert Braucher, *The Legislative History of the Uniform Commercial Code*, 58 COLUM. L. REV. 798, 798 (1958) (stating that Pennsylvania was the first state to enact the Code in April 1953).

states had enacted the code. Currently, all 50 states, the District of Columbia, and the U.S. Virgin Islands have adopted the U.C.C. as state law, although some have not adopted every single provision contained within the Code."[5] The U.C.C. is a comprehensive commercial statute enacted in every jurisdiction, making it the most successful codification project in Anglo-American history.[6] U.C.C. Article 2 applies to transactions of goods, offering the parties to sales agreement extensive contractual rights, protections and limitations.[7] "Article 2 of the Uniform Commercial Code, the sales article of the most successful codification in American law, is also the subject of voluminous literature."[8] Nevertheless, the last set of major amendments to U.C.C. Article 2 took place in 1958,[9] sixty-one years ago.

Since the 1980s, software is at "the core of most modern organizations, most products and most services."[10] Venture capitalist Marc Andreessen famously wrote, about spurring innovations disrupting traditional industries, "[s]oftware is eating the world."[11] The two leading software contracting methods today

---

5. *See* Uniform Commercial Code (UCC), Inc., https://www.inc.com/encyclopedia/uniform-commercial-code-ucc.html (last visited Apr. 3, 2019) (discussing the history of the U.C.C.) (on file with the Washington and Lee Law Review).

6. See James J. White & Robert S. Summers, Uniform Commercial Code 5 (3d ed. 1988) ("Judged by its reception in the enacting legislatures, the Code is the most spectacular success story in the history of American law.").

7. *See* Gregory E. Maggs, *The Waning Importance of Revisions to U.C.C. Article 2*, 78 NOTRE DAME L. REV. 595, 600 (2003) (explaining the scope of U.C.C. Article 2).

8. Zipporah Batshaw Wiseman, *The Limits of Vision: Karl Llewellyn and the Merchant Rules*, 100 HARV. L. REV. 465, 466 (1987).

9. *See* Maggs, *supra* note 7, at 600 (discussing the history of revisions to U.C.C. Article 2).

10. *See* ROBERT J. SHAPIRO, THE U.S. SOFTWARE INDUSTRY: AN ENGINE FOR ECONOMIC GROWTH AND EMPLOYMENT 2 (2014) (quoting Dr. William Raduchel, a Harvard professor and later executive at Sun Microsystems, Xerox, and AOL Time Warner).

11. Marc Andreessen, *Why Software Is Eating the World*, WALL ST. J. (Aug. 20, 2011), https://www.wsj.com/articles/SB10001424053111903480904576512250915629460 (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

are software licensing and software-as-a-service (SaaS).[12] Software as a Service or cloud computing delivers a software application over the Internet, or across other networks, to users on an on-demand basis. A customer can access software using Internet-enabled mobile devices (including Apple iPhone and iPad, Google Android and Windows Phone and Kindle Fire). "The SaaS access contract is rapidly displacing licensing, the lease of computer systems, and the sale of computer systems because it enables user access through a provider hosted website, where the customer does not need to install or maintain expensive IT infrastructure to use and maintain the software."[13] Cloud computing is the most recent computer contracting development where users access software or store data on the Internet rather than download applications or accessing data stored on their own computer.[14] SaaS has evolved over the past decade because of its lower initial cost commitment, service flexibility, and scalability that enables customers to tailor IT solutions to actual needs.[15]

U.C.C. Article 2 makes no mention of software, as the sales article was drafted decades before the development of applications marketed separately from computer systems.[16] Beginning in the 1970s, however, U.S. courts stretched sales law to computer

---

12. *See* Michael L. Rustad & Maria Vittoria Onufrio, *The Exportability of the Principles of Software: Lost in Translation?*, 2 HASTINGS SCI. & TECH. L.J. 25, 31 (2010) (discussing how licensing is the most appropriate contractual form for software).

13. 1 ESTHER C. RODITTI & MICHAEL L. RUSTAD, COMPUTER CONTRACTS § 2.07 (2018).

14. Antonio Regalado, *Who Coined 'Cloud Computing'?*, MIT TECH. REV., https://www.technologyreview.com/s/425970/who-coined-cloud-computing/ (last visited Apr. 3, 2019) ("Some accounts trace the birth of the term to 2006, when large companies such as Google and Amazon began using 'cloud computing' to describe the new paradigm in which people are increasingly accessing software, computer power, and files over the Web instead of on their desktop.") (on file with the Washington and Lee Law Review).

15. *See Information Technology–Cloud Computing–Overview and Vocabulary No. 17788:2014*, INT'L. STANDARD, (Oct. 2014) https://www.iso.org/standard/60544.html (last visited Apr. 3, 2019) [hereinafter *Cloud Computing Overview & Vocabulary No. 17788:2014*] (defining and explaining cloud computing and its various forms) (on file with the Washington and Lee Law Review).

16. *See* Rustad & Onufrio, *supra* note 12, at 30 (discussing how Article 2 was not written expressly for software).

contracts that included both hardware and software.[17] "Most courts have held that computer software qualifies as a 'good,' but legal uncertainty continues with regard to certain software transactions."[18] Courts created a legal fiction in extending Article 2 to software licensing, which involves the transfer of intangibles, such as software and data, from the licensor to the licensee.[19]

Even though U.C.C. Article 2 has limited relevance to licensing and even less relevance to SaaS,[20] it has become the chief source of computer law due to courts' lack of a better alternative. U.C.C. Article 2, however, cannot serve as the leading source of law for software contracts because licensing offers only a right to access and use,[21] and SaaS is conceptualized as a service offered through access contracts. These contracting forms do not fit either the sale or the lease of goods.[22] This is an important issue because these software contracting forms are crucial to America's information technology infrastructure.[23]

---

17. *See id.* ("Since the birth of the software industry, U.C.C. Article 2 concepts devised for durable goods have been stretched to the general intangible of software.").

18. Richard Raysman, *The U.C.C. and Software Contracts: Recent Developments*, HOLLAND & KNIGHT (Feb. 18, 2011), https://www.hklaw.com/digitaltechblog/the-ucc-and-software-contracts-recent-developments-02-18-2011/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

19. *See* Rustad & Onufrio, *supra* note 12, at 30 (discussing how courts have slowly extended U.C.C. Article 2 to software).

20. A European Commission study of multiple jurisdictions concluded:

> Regulations on sales of goods are deemed inapplicable, as goods are likely defined as tangible movable items which is considered not to be the case in a cloud computing context (although Swedish legal scholars take a differing point of view in this respect). As a result of the difficulties in legally qualifying the cloud agreement, several countries have stated that cloud contracts are likely to be qualified as *sui generis* contracts.

EUR. COMMISSION & DLA PIPER UK LLP, COMPARATIVE STUDY ON CLOUD COMPUTING CONTRACTS 8 (2015), https://publications.europa.eu/en/publication-detail/-/publication/40148ba1-1784-4d1a-bb64-334ac3df22c7/language-en [hereinafter *Commission Report on Cloud Computing Contracts*].

21. *See* Rustad & Onufrio, *supra* note 12, at 31 ("Courts acknowledge the lack of fit between sales law and the law of software licensing.").

22. *Id.*

23. *See id.* at 25 ("Software licensing is America's third largest industry,

Part II of this Article examines how the U.C.C. evolved as the primary source of law for the first generation of computer contracts during the mainframe computer era. Beginning in the 1950s and 1960s, U.C.C. Article 2 was a principal source of law, and courts had no trouble applying the U.C.C. to computer systems, whether sold or leased.[24] Until the mid-1980s, when the sponsors of the U.C.C. proposed Article 2A to provide contract law defaults for leases of goods, courts stretched Article 2 to both sales and leases of computers.[25] In 1987, the drafters of U.C.C. Article 2A tailored U.C.C. Article 2 rules for personal property leases.[26] Today, software licensing and cloud computing are rapidly displacing sales and leases.[27] Unfortunately, neither Article 2 nor 2A provide workable default terms for these rapidly evolving contracting practices.[28]

In the 1990s, the sponsors of the U.C.C. proposed a new Article 2B to "provide a commercial law tailored for the transfer of data, text, and other forms of information. Article 2B may emerge as the most significant law reform of this century providing a legal infrastructure for the age of information."[29] After the ALI withdrew its support for proposed Article 2B in 1999, the NCCUSL proposed Uniform Computer Information Transaction Act (UCITA) as a standalone statute decoupled from the U.C.C.[30]

---

accounting for an increasingly large share of all exports.").

24. *See* Maggs, *supra* note 7, at 596 (discussing how Article 2 was drafted in the 1950s and enacted in forty-nine states).

25. *See* Holly K. Towle, *Enough Already: It Is Time to Acknowledge that U.C.C. Article 2 Does Not Apply to Software and Other Information*, 52 S. TEX. L. REV. 531, 541 (2011) (stating that U.C.C. Article 2A governs the lease of goods).

26. *Id.*

27. *See* Rustad & Onufrio, *supra* note 12, at 31 ("Licensing is far more flexible than assignments or sales because the licensor may control permitted locations, duration of use, number of users, and even the permitted use of the software.").

28. *See* Towle, *supra* note 25, at 542 ("In short, we are talking about a contract code written for sales, the passage of title, or both—not leases and not any other kind of contract that does not pass title.").

29. Michael L. Rustad, *Commercial Law Infrastructure for the Age of Information*, 16 J. MARSHALL J. COMPUTER & INFO. L. 255, 258 (1997).

30. *See* Christi Frum, *The UCITA: An Act Designed to Squash Your Rights*, INC. (May 19, 2000), https://www.inc.com/articles/2000/05/19210.html (last visited Apr. 3, 2019)

The American Law Institute (ALI) and the National Conference of

Maryland and Virginia were the only states to adopt UCITA, which led the NCCUSL to withdraw UCITA for future state adoptions.[31] These projects to develop software contracting defaults failed because they were perceived as being too licensor friendly.[32] UCITA was supported by a who's who of the software industry.[33]

> Commissioners on Uniform State Laws (NCCUSL), the two parties behind the UCC and responsible for drafting Article 2B, last year couldn't come to an agreement on the contents of the article. In fact, the ALI so opposed the provisions of Article 2B that it actually withdrew from the drafting project in early 1999 and refused to sign the final proposal, a first in the 50-year history of the UCC. Since approval from both the ALI and the NCCUSL is necessary for a modification to the UCC, the NCCUSL moved ahead with the final proposal and shaped it into a separate act, the current UCITA.

(on file with the Washington and Lee Law Review).

31. *See* Rustad & Onufrio, *supra* note 12, at 38–40

> Maryland and Virginia were the only states to adopt UCITA from 1999 to the present. Three states have adopted defensive "bomb-shelter" statutes to protect their citizens from some of UCITA's anti-consumer protection features. . . . In 2004, the NCCUSL President withdrew a report on UCITA for approval by the American Bar Association because of "strongly held" beliefs the ABA should not take a position on the model statute. However, by 2009 it was clear that no states would enact UCITA and that it was a failed law reform project.

32. *See* Cem Kaner, *Not Quite Terrible Enough Software: Remarks at the 1997 Software Engineering Process Group Conference*, BAD SOFTWARE, http://badsoftware.com/sepg.htm#1 (last updated Nov. 10, 1997) (last visited Apr. 3, 2019)

> As I read the drafts, they resolve ambiguities in current laws in favor of software publishers, and against customers and small developers. In my view, this will substantially reduce a seller's legal and competitive exposure for shipping bad software. Therefore, many companies will spend less than they spend today to prevent, find, and fix bugs because it will now cost them less when they ship defective products to customers.

(on file with the Washington and Lee Law Review).

33. *See* Dorte Toft, *Opponents Blast Proposed U.S. Software Law*, CNN (July 12, 1999), http://www.cnn.com/TECH/computing/9907/12/ucita.idg/index.html (last visited Apr. 3, 2019)

> According to the letter from UCITA's Ring, the following software industry organizations are supporting the draft—industry antipiracy body the Business Software Alliance (14 members, among those Microsoft Corp., Lotus Development Corp. and Adobe Systems Inc.), the Software Information Industry Association, Silicon Valley Software Industry Coalition and the Computer Software Industry

For example, both Article 2B and UCITA proposed licensing contract law defaults that did not extend mandatory consumer protection to mass market agreements.[34]

In 2009, the ALI approved the Principles of the Law of Software Contracts[35] (Principles) as a Restatement-like summary of the law to guide courts in interpreting software contracts. The ALI Reporters imported many licensing default provisions from UCITA and former Article 2B.[36] The ALI's Principles defer largely to software industry practices when it comes to consumer protection.[37] However, the Principles adopt a provision requiring software publishers to give a non-disclaimable warranty that its product "contains no material hidden defects of which the transferor was aware at the time of the transfer."[38] To date, however, no court has cited the Principles to construe a license agreement.[39]

Part III examines how courts have overextended U.C.C. Article 2, as the main source of law for software licensing, to the limits. In the mid-1980s, during the formative era of the software industry, courts made the decision to stretch Article 2 to generally available, mass-market software.[40] In the following years, some courts even extended Article 2 to custom software development

---

Association.

(on file with the Washington and Lee Law Review).

34. *See* Rustad & Onufrio, *supra* note 12, at 39 (explaining the backlash against the UCITA due to the law's "anti-consumer features").

35. *See generally* PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS (AM. LAW INST. 2010).

36. For example, section 1.13 of the Principles set forth the rules for parties' choice of law in standard-form transfer of generally available software. The Principles adopts the "reasonable relationship" test imported from former U.C.C. § 1-105. Section 1.13 sets the default for consumer agreements as "the law of the jurisdiction where the consumer is located." *Id.* § 1.13(b).

37. *See* Robert A. Hillman & Maureen A. O'Rourke, *Principles of the Law of Software Contracts: Some Highlights*, 84 TUL. L. REV. 1519, 1530 (2010) (explaining that the Principles "encourage practices that promote disclosure and reading of terms").

38. PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, § 3.05.

39. A license is a grant from the licensor to the licensee to use software or digital information for a designated period and therefore title never passes.

40. *See* Rustad & Onufrio, *supra* note 12, at 29–30 (discussing how U.C.C. Article 2 was gradually extended to software over time).

agreements.[41] In the absence of an alternative statute, U.S. courts have extended U.C.C. Article 2 to all software contracts.[42] However, Article 2 cannot be a roadmap for the licensing of intangibles, as opposed to a sale of goods, where title passes from the seller to the buyer.[43] Article 2 is also inapplicable to cloud computing, where the software is not installed on the customer's computer system but is accessed on the provider's computer system.[44] Cloud computing services are offered in a hosted environment managed by an external provider and do not involve the transfer of tangible goods to the customer.[45]

Part IV argues that the ALI and the NCCUSL should propose a new Article 2B for software licensing.[46] Article 2B is necessary as a contract roadmap for one of the most important computer contracting practices of today.[47] Proposed Article 2B will import U.C.C. Article 2 principles to address software licensing, while also explicating numerous issues unique to software contracting for companies, including the likes of Apple, Google, Microsoft,

---

41. *See* Pearl Invs., LLC v. Standard I/O, Inc., 257 F. Supp. 2d 326, 353 (D. Me. 2003) (discussing that a developer's agreement to create software "from scratch (concept to realization) for which it would be paid on a time and materials basis" was a contract for services); Surplus.com v. Oracle Corp., No. 10cv03510, 2010 WL 5419075, at *1 (N.D. Ill. Dec. 23, 2010) (applying U.C.C. Article 2 to Surplus.com's purchase of "a software program called 'Dynamic Pricing Engine and *e* Auction MME, Version 1.3 software' from Siebel Systems, Inc., which in turn ultimately became Oracle America.").

42. *See* Rustad & Onufrio, *supra* note 12, at 30 (discussing how courts have stretched U.C.C. Article 2 to the "general intangible of software").

43. *See id.* at 31 ("However, U.C.C. Article 2 does not address software licensing's contract/intellectual property interface.").

44. *See* Towle, *supra* note 25, at 547 (stating software as a service and cloud computing structures are not even wrapped in anything tangible and thus are arguably not goods that should be governed by U.C.C. Article 2).

45. *Id.*

46. Our proposed Article 2B for software licensing should not be confused with the prior U.C.C. Article 2B proposed twenty years ago by NCCUSL and ALI for a separate U.C.C. article for software-licensing agreements. When the ALI withdrew from the U.C.C. Article 2B, the Uniform Law Commission proposed UCITA, which was almost a mirror image of Article 2B. Our new Article 2B would have a narrower scope in only including software licenses in the U.C.C. for the first time. Our proposed Article 2B will incorporate mandatory consumer protection and be less skewed toward licensors than the earlier proposed article.

47. *Infra* Part IV.

Nintendo, IBM, Hewlett-Packard, and Nokia.[48] New Article 2B will also extend contractual default rules from former Article 2B and UCITA.[49]

Part V recommends a new Article 2C for SaaS.[50] Article 2C will provide the industry with a contract law roadmap for cloud computing contracts.[51] This new U.C.C. article will include provisions on definitions, formation rules, performance standards, as well as provider's duties and customers' rights including auditability, availability, interoperability, maintenance, performance, portability, the protection of personally identifiable information, resiliency, reversibility, and reasonable security.[52] Proposed Article 2C will establish contracting law defaults for service levels and service level agreements, while reducing non-uniformity of cloud contracting practices.[53]

Software licensing and SaaS contracts are innovative in their streamlining of products, as well as in their contracting practices, done in both a legislative and common law void.[54] The dearth of case law and the legislative void leaves both software providers and customers with no guidance on contract law issues on software licensing and cloud computing.[55] A growing number of courts and

---

48. *Infra* Part IV.

49. Article 2B deals with transactions in information and focuses on a subgroup of transactions in the "copyright industries." This subgroup is associated primarily with transactions involving software, on-line, and internet commerce in information and licenses involving data, text, images, and similar information. *Proceedings in the Committee of the Whole Uniform Commercial Code Article 2B*, *in* 8 NATIONAL CONFERENCE OF COMMISSIONERS ON UNIFORM STATE LAWS 17 (1997).

50. In this Article, we use the terms software-as-a-service and cloud computing interchangeably. Cloud services include: (1) Infrastructure as a service (IaaS); (2) Platform as a service (PaaS); (3) Software as a service (SaaS); and (4) Network as a service (NaaS). "Cloud deployment models are a way in which cloud computing can be organized based on the control and sharing of physical or virtual resources. The cloud deployment models include: (1) public cloud; (2) private cloud; (3) community cloud; and (4) hybrid cloud." *Cloud Computing Overview & Vocabulary No. 17788:2014*, *supra* note 15, at 6.

51. *Infra* Part V.

52. *Infra* Part V.

53. *Infra* Part V.

54. *See* Towle, *supra* note 25, at 534 (discussing how courts have both applied and not applied U.C.C. Article 2 to software).

55. *See id.* at 535 ("The result has been chaos for courts and practitioners trying to determine which contract law actually applies.").

commentators have observed that it is anomalous to apply a seventy-year old sales statute to software license agreements.[56]

New Articles 2B and 2C will provide meaningful protection for consumers, commercial users, and vendors, while encouraging the continuing expansion of software contracting practices. Articles 2B and 2C will propose a balanced legal infrastructure, decreasing legal uncertainty for software contracting law.[57] These new U.C.C. Articles will shed light on best practices for contract formation, as well as the application of representations and warranties, and propose mandatory consumer protection so that customers will have minimally acceptable remedies in the event of breaches, such as lost data or service interruptions.[58]

These proposed U.C.C. Articles will not be stone tablets from the legal heavens inscribed with default terms favoring the licensor and the cloud services providers, who generally are the stronger parties. Rather, these new Articles must be the product of direct consultation between the U.C.C. Reporters, Drafting Committee, and balance the rights of diverse stakeholders such as consumers, commercial and governmental users, as well as computer providers.

II. U.C.C. Article 2 Stretched to Computer Contracts

A. Brief History of U.C.C. Article 2

1. U.C.C. Purposes

William Story's 1847 treatise begins with the reflection "[t]here is probably no portion of law which is subject to more constant changes and additions than that relating to Sales of Personal Property."[59] Professor Story observed that no treatise

56. *See id*. at 531 (arguing U.C.C. Article 2 should not apply to licenses of software with or without recently proposed amendments).

57. *Infra* Part V.

58. *Infra* Part V.

59. WILLIAM W. STORY, PREFACE TO A TREATISE ON THE LAW OF SALES OF PERSONAL PROPERTY WITH ILLUSTRATIONS FROM THE FOREIGN LAW v (1847).

could pretend to keep up with the changing law of sales,[60] and noted that an "increase of commerce, not only gives birth to new questions, but materially modifies established doctrines."[61]

The U.C.C. is the principal source of law for specialized commercial transactions,[62] adopted fully in every state but Louisiana.[63] The purposes of the U.C.C. are: (1) to simplify, clarify, and modernize the law governing commercial transactions; (2) to permit the continued expansion of commercial practices through custom, usage, and agreement of the parties; and (3) to make uniform the law among the various jurisdictions.[64]

Article 2 of the U.C.C. governs contracts for the sale of physical goods.[65] A contract for the sales of goods is one in which the seller agrees to transfer goods conforming to the contract in exchange for a predetermined price.[66] Based on the definition of "goods," there is no dispute Article 2 of the U.C.C. applies to the sale of computer hardware, and peripheral equipment (means for storing

---

60. *Id*. at vi.

61. *Id*. at v.

62. The types of specialized commercial law transactions included within U.C.C. Articles are: (1) Article 2, Sales of Goods; (2) Article 2A, Leases of Personal Property; (3) Article 3, Negotiable Instruments; (4) Article 4, Bank Deposits and Collections; (5) Article 4A, Funds Transfers; (6) Article 5, Letters of Credit; (7) Article 6, Bulk Sales; (8) Article 7, Documents of Title; (9) Article 8, Investment Securities; and (10) Article 9, Secured Transactions. In addition to these specialized U.C.C. provisions, Article 1 of the Code contains a set of general provisions that apply to all of the U.C.C. Articles 10 and 11 are administrative provisions addressing such matters as effective dates, repeals, and transitional matters.

63. Mark T. Garsombke & Andrew J. Schlidt, *Overview of Article 2 of the Uniform Commercial Code*, ASS'N CORP. COUNSEL, Oct. 19, 2015, at 1, https://www.acc.com/resource-library/overview-article-2-uniform-commercial-code ("Every state has adopted some version of the U.C.C., although Louisiana has not fully adopted Article 2 preferring to maintain its own civil law tradition to govern the sale.").

64. *See* U.C.C. § 1-103(a) (AM. LAW INST. & UNIF. LAW COMM'N 2001) (stating the purposes of the U.C.C.).

65. *See id.* § 2-102

> Unless the context otherwise requires, this Article applies to transactions in goods; it does not apply to any transaction which although in the form of an unconditional contract to sell or present sale is intended to operate only as a security transaction nor does this Article impair or repeal any statute regulating sales to consumers, farmers or other specified classes of buyers.

66. *Id.* § 2-301.

information such as disk and tape drives and input and output devices such as printers and terminals).[67] However, "existing U.C.C. Article 2 does not apply to licenses of software and other information . . . ."[68] The shift from the sales of computer hardware and turnkey computer systems to software licensing created a legal lag, requiring updated U.C.C. Articles.[69]

2. U.C.C. Article 2 Has Been Stretched to the Limits

In this second decade of the twenty-first century, software contract law is badly out of date. The mechanical extension of the law of sales to software licensing and cloud computing is comparable to courts of the 1920s and 1930s prolonging "horse and buggy law" to resolve problems created by the rise of the automobile.[70] The theory of *caveat emptor*—let the buyer beware—made sense as horse-drawn buggies were assembled in a way that a buyer could inspect them to determine whether they were well constructed.[71] The intricacy of modern automobiles

---

67. *See id.* § 2-105(1) (defining "goods" as "all things (including specially manufactured goods) which are moveable at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities (Article 8) and things in action").

68. Towle, *supra* note 25, at 532.

69. *Cloud Computing Overview & Vocabulary No. 17788:2014*, s*upra* note 15, at 2 ("Cloud computing is a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on demand.").

70. Rustad & Onufrio, *supra* note 12, at 27–28

> The invention of the automobile reshaped every branch of U.S. law. In 1936, a law student observed that in 1905, all of American automobile case law could be contained within a four-page law review article, but that three decades later, a 'comprehensive, detailed treatment [of automobile law] would call for an encyclopedia. That law student was Richard M. Nixon, who would later become the thirty-seventh President of the United States. Nixon's conclusion was courts were mechanically extending 'horse and buggy law' to this new mode of transportation in most doctrinal areas.

71. *Why Products-Liability Law Is Important,* LUMEN, https://courses.lumenlearning.com/buslegalenv/chapter/9-1-introduction-why-products-liability-law-is-important/ (last visited Apr. 3, 2019) (discussing how the rise of automobiles had an effect on consumer laws) (on file with the Washington

makes it unlikely that the average consumers can understand issues such a roof deformation, cylinder head gasket failures, occupant restraint defects, seatback failures, fuel-integrity systems, or window motor regulator failures.[72] Strict products liability evolved to address the problem of dangerously defective automobiles with latent defects.[73]

"In less than a half century, the software industry has evolved into a multi-billion dollar industry."[74] Today, software shapes nearly every aspect of the American experience, while delivering the infrastructure for "modern devices, such as PCs, smartphones, tablets and navigation systems that we have come to rely on so heavily in our everyday lives."[75] The U.C.C., however, has not been updated for seven decades.[76] The most recent revisions to U.C.C. Article 2 were completed in the early 1950s, decades before the rise of the software industry.[77] At present, Article 2 easily accommodates the sale and lease of computer systems because hardware is classified as a tangible good under the U.C.C. definition of "goods."[78] Article 2 does not fit the commercial realities of software licensing and SaaS.[79]

---

and Lee Law Review).

72. *See id*. (listing various recent recalls for cars and other products).

73. For example, beginning in "the early 1970s, in the so-called crashworthiness cases, automotive manufacturers have been subject to lawsuits based on the amount of additional injury an occupant allegedly suffered during a collision by reason of a defect, even if the manufacturer had nothing to do with causing the collision itself." CHARLES W. BABCOCK, APPROACHES TO PRODUCT LIABILITY RISK IN THE U.S. AUTOMOTIVE INDUSTRY 84 (1994).

74. *Software: Statistics and Market Data on Software*, STATISTA, https://www.statista.com/markets/418/topic/484/software/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

75. *Id.*

76. *See* Braucher, *supra* note 4, at 798 (noting that Pennsylvania was the first state to adopt the U.C.C. in 1953).

77. *Id.*

78. U.C.C. § 2-105(1) (AM. LAW INST. & UNIF. LAW COMM'N 2018) ("'Goods' means all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities (Article 8) and things in action.").

79. *See* Towle, *supra* note 25, at 557 (arguing how it is relatively easy to determine today that SaaS and cloud computing should not be governed by U.C.C. Article 2).

Software differs from durable goods in conferring a lower-order property interest, granting rights and imposing restrictions on the licensee's right to use software or digital information for a designated period of time.[80]

> The licensing of software, like leases, validates the legal concept of the right to use property without the passage of title. While the consumer's title to the tangible copy of the software (the purchased CD-ROM, for example) may be absolute, that does not confer property rights upon the intangible code that makes up the software.[81]

As more devices and appliances such as household appliances, watches, cars and glasses are manufactured as "smart" devices, the software industry is evolving at an exponential rate.[82] Considering the rate of development seen over the past decade, it can be argued that software licensing and cloud computing are now the dominant forms of computer contracts, displacing sales and leases of computer systems.[83]

When considering software licensing, courts are asked to determine whether a transfer of the rights to use software constitutes an Article 2 transaction.[84] Licensing and cloud computing are often relational contracts accompanied by support services. U.C.C. Article 2 transactions, on the other hand, are generally one-time transactions for tangible goods.[85]

---

80. *See* Rustad & Onufrio, *supra* note 12, at 30 (explaining how software is different from durable goods).

81. *Id*.

82. *See* Ronald J. Hedge & Kevin F. Ryan, *The Internet of Things: What Is It, What Can Happen with It, and What Can Be Done when Something Happens*, N.Y. ST. B.J. 30, 30 (2018) (discussing the rapid growth of the internet of things).

83. *See* Rustad & Onufrio, *supra* note 12, at 31 (arguing licensing is more appropriate for software than assignments or sales).

84. *See id*. at 32 ("U.S. courts classify most software licenses as falling under U.C.C. Article 2 governing the sale of goods even though these transactions involve the transfer of information or digital data.").

85. *See* EDWARD A. PISACRETA, SETH H. OSTROW & KENNETH A. ADLER, INTELLECTUAL PROPERTY LICENSING: FORMS AND ANALYSIS §§ 2.01[1], 2.06 (2018) (stating that Article 2 transactions are "premised on the sale of a valuable tangible item in a one-time transaction").

Since the birth of the software industry four decades ago, courts have mechanically extended Article 2 to software licensing.[86] Most courts will apply Article 2 to mass-market and even custom software licenses, even though licensing does not involve tangibles or transfers of title from the licensor to the licensee.[87] Similarly, SaaS involves the granting of an access right, as opposed to the sale or transfer of a tangible.[88] The primary difference between software licensing and SaaS is, with licensing, the licensee has the right to use application software on the licensees own computer, however under SaaS, the licensee must purchase Internet access to software stored on a proprietary service.[89] In a typical access agreement, the customer will receive a nonexclusive, non-assignable, royalty free, worldwide right to access and use the SaaS services.[90]

Regardless of the obvious differences between a sale or a lease, and license and access contracts, to date, sponsors of the U.C.C. have not approved specialized Articles to address the two most important forms of computer contracts: licensing and SaaS access contracts.[91]

---

86. *See* Rustad & Onufrio, *supra* note 12, at 30 (explaining how the U.C.C. has been gradually stretched to apply to software).

87. *Id*.

88. *See* Towle, *supra* note 25, at 557 (discussing how SaaS typically works).

89. *Id*.

90. *See generally Software as a Service Agreement (V.0816)*, SAILPOINT, https://www.sailpoint.com/wp-content/uploads/2016/11/SailPoint-Software-as-a-Service-Agreement-Agr-Ver-081816-.pdf (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

91. *See* Towle, *supra* note 25, at 533

> U.C.C. Article 2 is a codified contract law, so some courts are tempted to use it as often as they can. However, it was written for sales of goods. Drafting started in the 1930s and its first adoption came in 1954. In short, U.C.C. Article 2 was written long before software, the Internet, and other digital information systems were introduced into commerce or even conceived. Although an attempt was made in the 1990s to update U.C.C. Article 2, that attempt did not involve a review with an eye towards information and, as noted, the amendments evolving out of that effort were not adopted by any state and have been withdrawn. Accordingly, we are still dealing with the version of U.C.C. Article 2 that was written only for goods and for sales of them.

3. Article 2 Stretched to Hybrid Computer Systems

The courts have had no trouble applying Article 2 to computer systems consisting of hardware including operating systems. Similarly, Article 2 is also the principal source of law for the sale of computer systems with preinstalled software, as preinstalled software is treated as a tangible good under Article 2.[92] Courts have also overextended Article 2 to contracts that incorporate software and services, instead of applying the common law of services to these hybrid contracts.[93]

The courts have employed two tests to determine whether Article 2 or the common law of services applies to a given transaction. The next section reviews the case law for applying U.C.C. Article 2 to computer systems including installed central processing units and applications and services.

a. The Predominant Purpose Test for Mixed Contracts

Article 2 of the U.C.C. applies to transactions in "goods."[94] A contract for services is not deemed a U.C.C. Article 2 transaction in goods; but is covered by the common law of services.[95] Courts generally apply the predominant purpose test to hybrid computer contracts where there are hardware, software, and services.[96] The test for hybrid computer contracts focuses upon the predominant factor or purpose of the agreement. Is it the rendition of services, with goods (e.g. hardware) incidentally involved, or is the

---

92. *See* Ferratella Bros. v. Sacco, 121 A.D.3d 1467, 1468 (N.Y. App. Div. 2014) (stating that the primary sale of goods, computer software, and hardware, is governed by U.C.C. Article 2).

93. *See* Surplus.com, Inc. v. Oracle Corp., No. 10 CV 03510, 2010 WL 5419075, at *5 (N.D. Ill. Dec. 23, 2010) (noting that the predominant purchase of the contract was for the sale of software goods, while the services involved were merely ancillary).

94. *See* U.C.C. §2-102 (AM. LAW. INST. & UNIF. LAW COMM'N 2018).

95. *See* 1 RODITTI & RUSTAD, *supra* note 13, § 2.01 ("[T]he common law of services applies when 'service predominates' and the sale of items is 'incidental.'").

96. *See id.* (describing the predominant purpose test—the most commonly used test by courts.).

predominant purpose a sale of goods, with services (e.g. maintenance) incidentally involved?[97]

If the computer contract is predominately for goods and only incidentally for services, courts will apply Article 2 of the U.C.C. to the entire contract.[98] If the contract is predominantly for services and only incidentally for goods, the court will apply the common law of services.[99] The common law of services will apply "when 'service predominates,' and the sale of items is 'incidental.' . . . While certain services . . . [may be] contemplated, the contract remains one for sale if those services were 'merely incidental or collateral to the sale of goods.'"[100] U.S. courts have steadily extended U.C.C. Article 2 to computer sales. However, these systems contain intangible software, as well as services such as installation, maintenance, and updating of software.[101]

In *Triangle Underwriters, Inc. v. Honeywell, Inc.*, [102] Triangle purchased a H-100 computer system consisting of hardware and software from Honeywell.[103] The court found the predominant purpose of the contract was for the purchase of a computer system,

---

97. *See id.* ("[C]ourts look to the 'essence of the agreement' on a case-by-case basis to decide how to characterize the transaction." (citing Triangle Underwriters, Inc. v. Honeywell, Inc., 604 F.2d 737, 742–43 (2d Cir. 1979))).

98. *See, e.g.*, Nielsen Bus. Equip. Ctr., Inc. v. Monteleone, 524 A.2d 1172, 1176 (Del. 1987) (awarding breach of warranty damages in a mixed contract for hardware, software, and services holding the hardware and software combined in a computer system was predominately goods and, therefore, U.C.C. Article 2 applied).

99. *See, e.g.*, Bruel & Kjaer v. Village of Bensenville, 969 N.E.2d 445, 450–51 (Ill. App. Ct. 2012) (applying the predominant purpose test to determine that the transaction was predominantly one of goods).

100. Triangle Underwriters, Inc. v. Honeywell, Inc., 604 F.2d 737, 742–43 (2d Cir. 1979) (citations omitted).

101. *See, e.g.*, RRX Indus. v. Lab-Con, Inc., 772 F.2d 543, 546 (9th Cir. 1985) (applying Article 2 to a computer system including intangible goods such as software, training, systems repairs, and upgrades); *Triangle Underwriters, Inc.*, 604 F.2d at 742–43 (applying U.C.C. Article 2 to computer system involving both hardware and software); USM Corp. v. Arthur D. Little Sys., 546 N.E.2d 888, 894 (Mass. App. Ct. 1989) (same); Commc'ns Grps., Inc. v. Warner Commc'ns, Inc., 527 N.Y.S.2d 341, 344 (Civ. Ct. 1988) (same); Camara v. Hill, 596 A.2d 349, 351 (Vt. 1991) (same); *see also* Bonna Lynn Horovitz, Note, *Computer Software as a Good Under the Uniform Commercial Code: Taking a Byte Out of the Intangibility Myth*, 65 B.U. L. REV. 129, 145 (1985) (noting courts apply U.C.C. Article 2 to both the hardware and software of computer systems).

102. 457 F. Supp. 765 (E.D.N.Y. 1978), *modified*, 604 F.2d 737 (2d Cir. 1979).

103. *Id.* at 767.

rather than for incidental installation or maintenance services.[104] The court reasoned "[a]lthough the ideas or concepts involved in the custom-designed software remained Honeywell's intellectual property, Triangle was purchasing the product of concepts."[105] In *Neilson Business Equipment Center v. Monteleone*,[106] the court applied the predominant purpose test, ruling that the parties agreed to a lease/purchase of a turn-key computer system consisting of hardware and software, which was classified as Article 2 goods, because Neilson's consulting and customized programming services were not central to the contract.[107]

b. Gravamen Test for Computer Contract Hybrids

Courts applying William Hawkland's test ask, "[W]hether the underlying action is brought because of alleged defective goods or because of the quality of the service rendered. If the gravamen of the action focuses on goods, then the U.C.C. governs."[108] The gravamen test offers an alternative to the predominant purpose test in determining what law should apply in complex computer contracts, and centers on what constitutes the source of the problem.[109] If the hardware were defective, Article 2 would apply; if, however, "the focus on the complaint is on the quality of the services rendered," the common law of services would apply.[110]

To date, courts have not applied the "gravamen of the action" test to computer contracts. U.C.C. Article 2B, proposed in the 1990s, adopted a "gravamen of the action" test.[111] The "gravamen

104. *See id.* at 769 ("The agreement . . . did not contemplate that it would run a data processing service for Triangle but rather that Honeywell would develop a completed system and deliver it 'turn-key' to Triangle to operate.").

105. *Id.*

106. 524 A.2d 1172 (Del. 1987).

107. *See id.* at 1174–75 (analyzing the hybrid contract under Article 2).

108. *In re* Trailer & Plumbing Supplies, 578 A.2d 343, 345 (1990).

109. *See* 1 WILLIAM HAWKLAND, UNIFORM COMMERCIAL CODE SERIES § 2-102:2 (1982) ("Article 2 would apply to the goods aspect of the transaction if that aspect of the transaction formed the gravamen of the action for relief.").

110. *Id.*

111. *See* U.C.C. § 2B-103 (AM. LAW INST. & UNIF. LAW COMM'N Sept. 25, 1997

of the action test" rejected the predominant purpose test when applied to mixed computer contracts.[112] If enacted, Article 2B would have applied U.C.C. Article 2 if the issue in a computer contract was defective hardware; however, Article 2 would not have applied if the dispute arose from related maintenance services.[113]

B. Article 2A Applies to Computer Leases

Article 2A of the U.C.C. was approved for introduction into state legislatures in 1987 by the ALI and the NCCUSL, who have long been co-sponsoring organizations of the U.C.C.[114] Computer leases are between a lessor, who delivers possession of the computer system for the term of the lease but retains both title and ownership of the computer system, and a lessee, who leases the computer system for a fixed term to return it to the lessor at the end of said term, assuming the system has any economic value.[115]

With a lease, "[t]itle is retained, maintenance is supplied as a part of the monthly fee, and the user is susceptible to persuasion by manufacturer personnel to add features and become ever more dependent on the manufacturer."[116] At the early stages of the industry, computer makers often leased their hardware rather than sold them, because computer systems often cost millions of dollars. Leasing enabled companies to pay monthly installments rather than a single multi-million dollar payment.

Draft) (noting that "the gravamen of the action" test is adopted to deal with "issues pertaining to the interface between Article 2B and other U.C.C. Articles").

112. *See* Rustad, *supra* note 29, at 275 n.95–96 (1997) (noting Article 2B's adoption of the "gravamen" test).

113. *See generally* Diane W. Savage, *The Impact of Proposed Article 2B of the Uniform Commercial Code on Consumer Contracts for Information and Computer Software*, 9 LOY. CONSUMER L. REV. 251 (1997) (describing the impact of the proposed Article 2B).

114. *Uniform Commercial Code*, UNIF. L. COMM'N, https://www.uniformlaws.org/acts/ucc (last visited Apr. 3, 2019) [hereinafter *U.C.C. Summary*] (summarizing Article 2A on leases) (on file with the Washington and Lee Law Review).

115. *See* 2 ESTHER C. RODITTI & MICHAEL L. RUSTAD, COMPUTER CONTRACTS § 6.02 (2018) (describing the mechanics of a computer lease).

116. 1 RODITTI & RUSTAD, *supra* note 13, § 3.02.

> In the formative era of the computer industry, when it was still primarily tab card equipment, the usual method of acquiring hardware was through a monthly rental or lease from the manufacturer. Both IBM and Remington Rand, the primary manufacturers of tab card equipment, leased their card punches and sorting equipment on the condition that the lessee buys the tabulating cards only from the lessor.[117]

Leasing provides the lessor with a steady stream of income (if cash is needed the cash can be discounted with a bank and secured by assignment of the remaining term of the lease).[118] The disadvantages for the lease include:

> the user's ability to terminate on short notice, as in a rental situation, exposes the manufacturer to the risk of large amounts of turned back equipment, especially if another maker—or even the same maker—comes up with a computer offering much more for the money.[119]

The original U.C.C. did not address leases of personal property, including computer hardware leases (a rapidly evolving market in the 1970s and 1980s).[120] Prior to the late 1980s, courts stretched U.C.C. Article 2 to interpret computer lease agreements.[121] Despite the major doctrinal differences between sales and leases, most notably the title never passing from lessors to lessees under a lease, most courts applied U.C.C. Article 2 to leases by analogy.[122]

---

117. *Id.*

118. *Id.*

119. *Id.*

120. Corinne Cooper, *Identifying a Personal Property Lease Under the UCC*, 49 OHIO ST. L. J. 195, 199 (1988) (noting the inclusion of personal property leases was not until the adoption of Article 2A).

121. *See infra* note 122 and accompanying text (noting the necessary inclusion of leases within the Article 2 framework).

122. *See, e.g.*, Hertz Comm. Leasing Corp. v. Transp. Credit Clearing House, 298 N.Y.S.2d 392, 395 (Civ. Ct. 1969) ("[I]t would be anomalous if this large body of commercial transactions involving leases were subject to different rules of law than other commercial transactions which tend to the identical economic result."), *rev'd on other grounds*, 316 N.Y.S.2d 585 (N.Y. App. Term 1970). *See generally* Charles W. Mooney, Jr., *Personal Property Leasing: A Challenge*, 36 BUS. LAW. 1605 (1981) (analyzing the need for inclusion of personal property leasing within the UCC).

In 1987, the ALI and NCCUSL promulgated Article 2A of the U.C.C., adopting Article 2 concepts to leases of personal property.[123] Article 2A, applies to any transaction creating a lease "regardless of form."[124] As NCCUSL acknowledged, U.C.C. Article 2A imports many concepts from U.C.C. Article 2, while altering rules for leases,[125] making Article 2A the functional equivalent of Article 2 when adapted to the unique features of leases. [126]

For example, when a lessee fails to pay rent, Article 2A allows lessors to seek rent, rather than monetary damages and the repossession goods.[127] Article 2 does not provide for repossession of goods, unless an Article 9 security agreement exists.[128] Regardless of a few differences attributable to the nature of leases, Article 2A shares many common concepts with Article 2.[129] U.C.C. Article 2A adapts Article 2 rules for: (1) offer and acceptance of a contract, (2) the statute of frauds, (3) warranties, (4) assignment of

---

123. *See U.C.C. Summary*, *supra* note 114 and accompanying text

> Uniform Commercial Code Article 2A governs leases of personal property. It was first added to the Uniform Commercial Code in 1987 and amended in 1990. A revision was approved by the Uniform Law Commission and the American Law Institute in 2003, but was not adopted in any jurisdiction and subsequently withdrawn by both organizations in 2011. Thus, the 1987 version of Article 2A, as amended in 1990, remains the official text.

124. U.C.C. § 2A-102 (AM. LAW. INST. & UNIF. LAW COMM'N 2018).

125. *See Guide to Uniform and Model Acts*, UNIF. LAW COMM'N, https://www.uniformlaws.org/viewdocument/guide-to-uniform-model-acts-2017 (last visited Apr. 3, 2019) (describing the adoption and contents of U.C.C. Article 2A) (on file with the Washington and Lee Law Review).

126. *See U.C.C. Article 2A, Leases (1987) (1990) Summary*, UNIF. LAW COMM'N, http://www.uniformlaws.org/ActSummary.aspx?title=UCC%20Article%202A,%20Leases%20(1987)%20 (1990) (last visited Apr. 3, 2019) ("The initial decision to follow the principles of U.C.C. 2 was fundamentally the correct decision and the basic structure of U.C.C. 2A is sound.") (on file with the Washington and Lee Law Review).

127. *See* U.C.C. § 2A-501(3), cmt. 3 (AM. LAW INST. & UNIF. LAW COMM'N 1990) (highlighting that section 2A-501(3) recognizes the lessor's right to repossess goods paralleling Article 9's rights of repossession for a foreclosing secured party).

128. *See* U.C.C. § 9-501 (AM. LAW INST. & UNIF. LAW COMM'N 1977) (describing the effectiveness of a security agreement).

129. *See* U.C.C. § 2A, foreword (AM. LAW INST. & UNIF. LAW COMM'N 1990) (noting that Article 2A borrows heavily from Article 2).

interests, risk of loss and (5) remedies upon breach of contract to leases.[130]

C. The Case for Specialized Default Rules

1. Article 2B for Information Transfers

Beginning in the 1990s, the software industry led the movement to codify a specialized law to address the unique features of licensing software, as Article 2 provided little guidance on licensing and transferring rights.[131] U.C.C. Article 2B was the first attempt to codify licensing during the revision of the U.C.C. in the early 1990s.[132] The idea was to create specialized U.C.C. Articles 2, 2A, and 2B spokes with a common hub of general provisions.[133]

In March of 1995, NCCUSL approved a "hub and spoke" model that treated Article 2B as a separate spoke sharing hub provisions with current Article 2 provisions.[134] The model recognized Articles 2, 2A, and 2B as having a hub of common principles, with each article specializing in an area of law represented by the spokes for

---

130. *See Uniform Law Summary*, *supra* note 114 (describing the updated Article 2A concerning leases).

131. *See* Robert A. Hillman & Jeffrey J. Rachlinski, *Standard-Form Contracting in the Electronic Age,* 77 N.Y.U. L. REV. 429, 491 (2002) ("[W]e contend that UCITA maintains the contextual, balanced approach to standard terms that can be found in the paper world.").

132. Former Article 2B originated in the ALI/NCCUSL project to update U.C.C. Article 2. *See* Amelia H. Boss, *Developments on the Fringe: Article 2 Revisions, Computer Contracting, and Suretyship*, 46 BUS. LAW. 1803, 1805–14 (1991) (describing the drafting process of Article 2); Jeffrey B. Ritter, *Software Transactions and Uniformity: Accommodating Codes Under the Code*, 46 BUS. LAW. 1825, 1825–28 (1991) (describing the need for the Article 2 revision project to incorporate software into the U.C.C.).

133. *See* Savage, *supra* note 113, at 254 ("[P]rovisions of Article 2 with common application to sales of goods, leases, software and licensing would be grouped in one part (the 'hub'). Other parts (the 'spokes') would deal with issues unique to sales of goods, leases, software and information contracts.").

134. *See* Michael L. Rustad, *Making UCITA More Consumer-Friendly*, 18 J. MARSHALL J. COMPUTER & INFO. L. 547, 552–53 (2000) (noting the sharp opposition to the model).

Articles 2, 2A, and 2B corresponding to sales, leases and licenses, respectively.[135] Beginning in the mid-1990s, Article 2B's Reporter and the Drafting Committee, often in consultation with the American Bar Association's (ABA) Software Licensing Subcommittee of the Business Law Section, produced draft after draft.[136]

From the beginning, Article 2B was controversial, because many stakeholders viewed the proposed statute as skewed in favor of large software publishers like Microsoft. In 1999, the ALI withdrew its support from U.C.C. Article 2B.[137] Thereafter, NCCUSL sponsored UCITA, a stand-alone state statute.[138] Both

---

135. Raymond T. Nimmer, *Intangibles Contracts: Thoughts of Hubs, Spokes, and Reinvigorating Article 2*, 35 WM. & MARY L. REV. 1337, 1340 (1994)

> In 1993, the Article 2 Drafting Committee adopted a preliminary working policy that supports incorporation of software and related intangibles contracts into Article 2 through a "hub and spoke" configuration. The "hub" consists of general principles. Promulgated in the U.C.C., a hub of codified contract law can bring to contracts outside of sales, leases, and licenses the benefits of visible, nationally consistent rules. This would enhance the flexibility of Article 2 to provide guidance on new transactions by direct application and by analogy. The "spokes," on the other hand, reflect that different transactions require different background law principles. The spoke idea postulates that there are differences in what contract law should underlie sales contracts, leases, licenses, services contracts, and other commercial deals. The differences are important. The spokes allow transactionally relevant differences to be hung from the basic contract law hub with new frameworks evolving as the transactions mature into commercial significance.

136. *See infra* notes 153, 159 (noting various versions of Article 2B drafts).

137. *See* Rustad, *supra* note 134, at 554 (noting the fatal blow that ALI's withdrawal sent to Article 2B as "[b]oth the ALI and the NCCUSL needed to approve a completed draft before it could be introduced in the state legislatures").

138. *Id.* at 553

> The death knell for the hub and spoke model sounded in late July, 1995, when NCCUSL abandoned the entire hub and spoke architecture in favor of making Article 2B a separate U.C.C. article. NCCUSL eliminated the hub and spoke but retained Raymond Nimmer as the Article 2B reporter. . . . In May 1999, the ALI withdrew sponsorship of Article 2B as a separate article of the U.C.C., and the NCCUSL approved the new Uniform Computer Information Transactions Act two months later. . . . The final approved version of UCITA reflects compromises with various consumer and industry stakeholders.

Article 2B and UCITA adopted U.C.C. Article 2's legal infrastructure, tailoring it for software licensing.[139]

Proposed Article 2B would have expanded the U.C.C. to provide legal infrastructure for diverse information transfers, such as software licenses, online contracts, and Internet-related contracts.[140] The former Article 2B (1) established rules for enforceable attribution procedure in electronic contracts, (2) recognized the enforceability of mass-market licenses, (3) established protections for licensors on transferability of a license, and (4) expressly dealt with effect on warranty of modification of code in a copy of a program.[141] Many provisions of the failed Article 2B may be imported or tailored to create a new Article 2B for software licensing.

Former Article 2B established a licensing legal infrastructure when applied broadly across converging industries; developed both choice of law and forum clauses for commercial licenses; codified "contractual treatment of electronic limiting or management devices"; and developed rules for confidential material.[142] Former

---

139. *See* E-COMMERCE: FINANCIAL PRODUCTS F-5 (Brian W. Smith ed., 2001)

> Article 2 served as both a model and a point of departure for UCITA. Like Article 2, UCITA covers a variety of transactions, many of which take place solely between merchants. Article 2 governs sales of jet planes as well as toasters, not to mention the large-scale acquisition of jet and toaster parts. UCITA governs access by Fortune 500 businesses to sophisticated databases as well as distribution of software to the public; UCITA also covers custom software development and the acquisition of various rights in multimedia products. Both UCITA and Article 2 are based upon the principle of freedom of contract: with limited exceptions, the terms and effect of a contract can be varied by agreement. Most provisions of both statutes are default rules, applicable only if the parties do not specify some other rule.

140. In the mid-1990s, the "Article 2 Drafting Committee concluded that an appropriate approach would be to develop a hub and spoke configuration for Article 2 under which licensing and sales would be treated in separate chapters of revised Article 2, both chapters being subject to general contract law principles stated in the hub of the revised article." *See* U.C.C. § 2B, prefatory note at 7 (AM. LAW INST. & UNIF. LAW COMM'N Jul. 25–Aug. 1, 1997 Draft). But in July 1995, the Executive Committee of NCCUSL was to develop a separate U.C.C. Article 2B. *Id.*

141. *See id.* at 3 (noting the "Licensee Benefits" of Article 2B).

142. *See id.* at 2 (noting the "Benefits and Positions in Draft Article 2B by Party").

Article 2B sought to provide "guidance on procedures to modify on-going contracts, confirm[] that exceeding a license as a breach of contract, [and] establish[] standard[s] on connection of remedy and consequential damages."[143]

The proposed U.C.C. software Article would have given courts the duty to police and nullify undisclosed refusal terms in the mass-market for consumers and businesses, while creating a duty of reasonable care to avoid transmitting viruses in copies not waivable in the mass-market.[144] Article 2B created a right to refund for mass-market licensees, a protection largely applicable in consumer transactions.[145]

The former Article 2B provided a contract roadmap for software licensing and rights for licensees (right of quiet enjoyment, enforceable express warranties for software publisher's advertisements).[146] Article 2B created specialized software warranties including a "warranty for accuracy of non-published informational content."[147] Article 2B was the first to recognize an "implied system integration warranty" as well as non-infringement warranties for software.[148] Article 2B extended both the "perfect tender rule for mass-market transactions" and, in commercial contracts, the "right to demand a cure for accepted imperfect tender."[149] The Article 2B drafters adapted U.C.C. Article 2 rules to the transfers of intangible information.[150] Chart One outlines parts of the original Article 2B's software licensing roadmap.

---

143. *Id.* at 3.

144. *See id.* (noting that Article 2B would have "create[d] duty of reasonable care to avoid viruses in copies that cannot be waived in mass market").

145. *See id.* § 2B-113 (outlining the opportunity to review and refund).

146. *See id.* at 3 (listing licensee benefits).

147. *Id.*

148. *Id.*

149. *Id.* at 4.

150. *See Lee Kissman,* Comment, *Revised Article 2 and Mixed Goods/Information Transactions: Implications for Courts*, 44 SANTA CLARA L. REV. 561, 567 (2004). (explaining that intangible information includes information such as software licensing.)

CHART ONE: SYNOPSIS OF FORMER U.C.C. ARTICLE 2B[151]

Part of Article 2B	*Purpose of Part of Article 2B*	*Selected Sections*
Part 1	General Provisions	2B-101, Short Title; 2B-102 Definitions; 2B-103 Scope; 2B-107 Choice of Forum; 2B-110, Attribution Procedure; 2B-111, Attribution of Electronic Record, Message, or Performance; 2B-112 Manifesting Assent; 2B-113, Opportunity to Review; Refund; 2B-114, Authentication, Effect and Proof, Electronic Agent Authentication.
Part 2	Formation	2B-201, Formal Requirements; 2B-202, Formation in General; 2B-203, Offer and Acceptance; 2B-204, Electronic Transactions and Messages, Timing

151. *See* U.C.C. § 2B (AM. LAW. INST. & UNIF. LAW COMM'N Sept. 25, 1997 Draft) (providing a draft of the 1997 proposed Article 2B).

		of Contract, and Effectiveness of Message; 2B-205, Acknowledgment of Messages; 2B-206, Firm Offers
Part 3	Construction	2B-301, Parol or Extrinsic Evidence; 2B-302, Course of Performance or Practical Construction; 2B-305, Open Terms; 2B-307, Adopting Terms of Records; 2B-308, Mass-Market Licenses
Part 4	Warranties	2B-401, Warranty and Obligations Concerning Authority and Infringement; 2B-402, Express Warranties; 2B-403, Implied Warranty; Merchantability and Quality of Computer Program; 2B-404, Implied Warranty: Information Content; 2B-405, Implied Warranty, Licensee's Purpose; System Integration; 2B-406, Disclaimer or Modification of

		Warranty
Part 5	Transfer of Interests and Rights	2B-501, Ownership of Rights and Title to Copies; 2B-502, Transfer of Party's Interest
Part 6	Performance	2B-601, Performance; 2B-610, Refusal of Defective Tender; 2B-614, Access Contracts; 2B-619, Cure; 2B-622, Anticipatory Repudiation; 2B-624, Risk of Loss; 2B-625, Excuse by Failure of Presupposed Conditions; 2B-626, Termination: Survival of Obligations
Part 7	Remedies	2B-701, Remedies in General; 2B-707, Measurement of Damages; 2B-708, Licensor's Damages; 2B-709, Licensee's Damages; 2B-716, Licensor's Self-Help

Chart One reveals that former Article 2B created a specialized contract law infrastructure for software licensing and other transactions in data. "In Article 2B transactions, the value of the subject matter lies in the intangibles, the information and

associated rights to use that information."[152] Part One of Article 2B updated Article 2 for electronic transactions. U.C.C. Article 2B defined electronic agents as "a computer program or other electronic or automated means used, selected, or programmed by a party to initiate or respond to electronic messages or performances in whole or in part without review by an individual."[153]

Former Article 2B defined electronic message as a "record, for purposes of communication to another person [that] is stored, generated, or transmitted by electronic means."[154] Electronic messages include "electronic data interchange, electronic or voice mail, facsimile, telex, telecopying, scanning, and similar communications."[155] An electronic transaction was defined as a "transaction formed by electronic messages in which the messages of one or both parties will not be reviewed by an individual as an ordinary step in forming the contract."[156]

Article 2B coined the concept of the "record" as the modern functional equivalent of pen and paper writing. A "record" is retrievable information inscribed on a tangible medium stored in an electronic or other medium.[157] Article 2B adopted formal requirements for information transfers.[158] Section 2B-115 imposed a commercial reasonableness standard for attribution procedures.[159]

---

152. U.C.C. § 2B, prefatory note at 2 (AM. LAW INST. & UNIF. LAW COMM'N Jul. 25–Aug. 1, 1997 Draft).

153. U.C.C. § 2B-102(a)(16) (AM. LAW INST. & UNIF. LAW COMM'N Sept. 25, 1997 Draft).

154. *Id.* § 2B-102(a)(17).

155. *Id.*

156. *Id.* § 2B-102(a)(18).

157. *Id.* § 2B-102(a)(35).

158. *See* Carlyle C. Ring, Jr., *Positive Attributes of Article 2B*, UNIF. LAW COMM'N, https://my.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=1b44f369-d6c3-7575-970b-fd8407f9de72&forceDialog=0 (last visited Apr. 3, 2019) (noting that 2B would create a framework for publishing of information) (on file with the Washington and Lee Law Review).

159. *See* U.C.C. § 2B-115 (AM. LAW INST. & UNIF. LAW COMM'N Sept. 25, 1997 Draft) ("The commercial reasonableness of an attribution procedure is to be determined by the court in light of the purposes of the procedure and the commercial circumstances at the time of the parties agree to or adopt the procedure.").

As Chart One proves, former U.C.C. Article 2B (1) tailored Article 2 rules for software licensing and information transfer; (2) created electronic contracting rules adapted from U.C.C. Article 2; (3) recognized the concept of mass-market licenses for standard-form licenses, where the terms dictated by the licensor prevail; (4) created a substantial performance standard displacing the perfect tender rule in negotiated license agreements; (5) tailored Article 2 warranties for software licensing creating a new systems integration warranty; (6) created rules for transferring interests in licenses; and (7) adapted U.C.C. Article 2 remedies to licensing recognizing licensor's self-help, which is not followed in sales law.[160]

Article 2B was proposed at a time when software licensing was still a work in progress. "Ultimately, it became apparent that consensus could not be reached on some of the key issues confronting the drafters of Article 2B. In retrospect this is not surprising as software licensing is so new that case law has not yet identified and provided solutions to a wide spectrum of issues as was the case before the initial codifications of goods law in the English Sale of Goods Act and Article 2's predecessor, the Uniform Sales Act."[161]

2. The Uniform Computer Information Transactions Act

In the summer of 1999, after the ALI withdrew from the U.C.C. Article 2B drafting process, NCCUSL approved UCITA as a stand-alone software statute decoupled from the U.C.C.[162] UCITA, a legal framework devised to address licensing and other information transfers, is a specialized statute enacted to develop a legal framework for the licensing of information, software, and

160. *See supra* note 151 (outlining the components of Article 2B).

161. William H. Henning, *Amended Article 2: What Went Wrong?*, 11 DUQ. BUS. L.J. 131, 134 (2009).

162. *See* David Syrowik, *The Uniform Computer Information Transactions Act (UCITA) and Reverse Engineering*, MICH. B. J., Mar. 2003, at 30, 32 (2003) ("UCITA gives courts the power and responsibility to reconcile commercial licensing law with intellectual property law, most of which is federal in origin.").

other forms of digital data.[163] Similar to Article 2B, UCITA drew in large part from Article 2 in devising defaults for the licensing of information.[164]

UCITA, the mirror image of old Article 2B, closely tracked Article 2B's methodology for contract formation, warranties, and remedies with nearly identical statutory language.[165] UCITA Section 211 adopts Article 2's definition of a contract including the express agreement, "course of dealing, usage of trade, and the nature of the parties' conduct."[166] Chart Two depicts UCITA's elements, adapting U.C.C. Article 2 to the licensing of information.

CHART TWO: 2002 VERSION OF UCITA: AN OVERVIEW[167]

Title of Parts	Section Numbers
Part I: General Provisions: Short Title & Definitions, General Scope and Terms	§§ 101–118
Part II: Formation & Terms, Formation of Contract, Terms of Records & Electronic Contracts, Idea and Information Submissions	§§ 201–215
Part III: Construction: General Interpretation	§§ 301–308
Part IV: Warranties	§§ 401–410
Part V: Transfer of Interests and Rights: Ownership and Transfers, Financing Arrangements	§§ 501–511
Part VI: Performance: General Performance in Delivery of Products	§§ 601–618
Part VII: Breach of Contract: General, Defective Copies; Repudiation and Assurances	§§ 701–710
Part VIII: Remedies: General	§§ 801–816

163. UNIF. COMPUTER INFO. TRANSACTIONS ACT (UNIF. LAW COMM'N 2002) [hereinafter UCITA].

164. UCITA's Prefatory Note by its Reporter stated: "Article 2 served as both a model and a point of departure for UCITA. Like Article 2, UCITA covers a variety of transactions, many of which take place solely between merchants. . . . Both UCITA and Article 2 are based upon the principle of freedom of contract: with limited exceptions, the terms and effect of a contract can be varied by agreement." *See* UCITA, *supra* note 163.

165. *See id.* (describing similarities between Article 2 and UCITA).

166. UCITA, *supra* note 163, § 210(a).

167. UCITA, *supra* note 163.

Part IX: Miscellaneous Provisions	§§ 901–904

Section 102(a) (10) of UCITA defines computer information in relevant part as "information in electronic form which is obtained from or through the use of a computer or which is in a form capable of being processed by a computer."[168]

> The statutory purposes of UCITA are to: (1) facilitate computer or information transactions in cyberspace; (2) clarify the law governing computer information transactions; (3) enable expanding commercial practice in computer information transactions by commercial usage and agreement of the parties; and (4) make the law uniform among the various jurisdictions.[169]

In 2002, NCCUSL revised UCITA, allowing for introduction into the states.[170] However, NCCUSL has since withdrawn UCITA after it was enacted in only two states, Maryland and Virginia.[171] A few jurisdictions even enacted "poison pill" statutes, declaring that courts in said states will not enforce choice of law provisions where the parties selected UCITA as the operative law.[172]

The most significant criticism of UCITA was that its provisions were slanted in favor of the software industry, thus depriving consumers of minimum adequate rights and remedies.[173]

---

168. UCITA, *supra* note 163, § 102(a)(10).

169. Rustad & Onufrio, *supra* note 12, at 37.

170. *See* David A. Szwak, *Uniform Computer Information Transactions Act [U.C.I.T.A.]: The Consumer's Perspective*, 36 LA. L. REV. 27, 27–28 (noting that NCCUSL "decided to forge ahead, attempting to gain passage on a state-by-state basis").

171. *See* Patrick Thibodeau, *Mass. Could Be Fifth State to Adopt Anti-UCITA Law*, COMPUTERWORLD (June 4, 2003, 1:00 AM), https://www.computerworld.com/article/2570450/enterprise-applications/mass--could-be-fifth-state-to-adopt-anti-ucita-law.html (last visited Apr. 3, 2019) (noting the difficulties of persuading states to adopt UCITA) (on file with the Washington and Lee Law Review).

172. *See id.* ("The measures adopted by the four anti-UCITA states—Iowa, North Carolina, West Virginia and, just last month, Vermont—are called 'bomb-shelter' legislation, intended to prevent a vendor from applying, for instance, Maryland's UCITA law provisions on residents in a bomb-shelter state.").

173. *See* Brian D. McDonald, *The Uniform Computer Information Transactions Act*, 16 BERKELEY TECH. L.J. 461, 463 (2001) (noting that UCITA

Critics of UCITA focused on various anti-consumer provisions addressing specifically situations where consumers were encouraged to agree to terms of the contract before having an opportunity to view the terms.[174]

In Maryland and Virginia, UCITA provisions are utilized as a contract roadmap for software licensing agreements.[175] Lawyers frequently import UCITA provisions into their mass-market license agreements because of the flexibility with the UCITA provisions. While UCITA has not been widely adopted across the United States, it is a valuable template for a variety of software licensing transactions.[176]

3. ALI's Principles of the Law of Software Contracts

In 2009, the ALI unanimously approved the Principles as a Restatement-like summary of specialized rules for software transfers.[177] "Specialized contract law consists of specific bodies of contract rules that govern particular subject matter transactions, such as insurance, employment, real estate, and the sale of goods."[178] The ALI Reporter explains the purpose of this Restatement-like project:

> The ALI Principles constitute specialized contract law. They apply to "agreements for the transfer of software for a consideration," including sales, licenses, leases or access contracts, whether negotiated or standard form and whether the delivery of software is by a tangible or electronic medium.

"strips consumers of many significant rights"); James D. Hornbuckle, Note, *The Uniform Computer Information Transaction Act: State Legislatures Should Take a Critical Look before Clicking Away Consumer Protections*, 23 WHITTIER L. REV. 839, 845 (2002) (noting that software makers pushed for UCITA for clearer rules).

174. McDonald, *supra* note 173, at 464.

175. *See supra* note 31 and accompanying text (discussing that Maryland and Virginia were the leaders in adopting UCITA).

176. *See* Elliott Alderman, *UCITA: Why Consumers Should Read The Fine Print*, CONTENT LAW. (June 05, 2002), https://www.thecontentlawyer.com/ucita-why-consumers-should-read-the-fine-print/ (last visited Apr. 3, 2019) (acknowledging the implications of mass-market license agreements) (on file with the Washington and Lee Law Review).

177. *See generally* William A. Hillman, *Contract Law in Context: The Case of Software Contracts,* 45 WAKE FOREST L. REV. 669 (2010).

178. *Id.* at 669.

> But the ALI Principles' scope is not overly broad. . . . More important, software is unique in that it is "a mixture of expressive art and a utilitarian invention and does not fit comfortably within any existing class of intellectual property." It is thus worthy of specialization on its own.[179]

The Principles aimed "to clarify and unify the law of software transactions" for courts, contractors, and policymakers. "The near demise of [the UCITA] and the vague scope provision of amended Article 2 of the [U.C.C.] (also unlikely to be widely adopted) exacerbate the confusion, calling attention to the current legal vacuum."[180]

The Reporters of the Principles characterized the following common software contract terms as troublesome: terms that "(1) preclude the transferee generally from making fair uses of the work; (2) ban or limit reverse engineering; (3) restrict copying or dissemination of factual information; and (4) forbid transfer of the software."[181] The Reporters did not take a position on the enforceability of any of these controversial terms; rather it is the province of the courts to determine their validity. Unlike UCITA, which states the operative law, the Principles offer guidance on the law.[182]

Section 2.01 of the Principles applies to both standard-form contracts including mass-market terms of use, as well as negotiated agreements.[183] The Principles' contract-formation rules assume that "the standard form is reasonably accessible electronically prior to initiation of the transfer at issue."[184] The key to the Principles' formation safe harbor is accessibility to contractual terms prior to entering into a standard form contract. "The safe harbor also requires a 'clickwrap' acceptance of terms,

---

179. *Id.* at 673.

180. PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, at 1–2.

181. *Id.* § 1.09 cmt. c.

182. The Principles will not become law in any jurisdiction unless and until a state legislature or court adopts them. To date, no state legislature has turned to the Principles for software licensing defaults and not a single court has even cited to the Principles.

183. PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, §2.01.

184. *Id.* § 2.02(c)(1).

which means that the 'I accept' icon must appear at the end of, or adjacent to, the standard form."[185] Contract formation is subject to limitations based upon public policy, unconscionability, and other invalidating defenses.[186] Neither the Principles nor the UCITA explicitly requires that reasonably accessible terms be readable.[187]

The ALI Principles is the first software contracting law to address open source license agreements. The Principles "apply to the transfer of proprietary or 'open-source software' if the transferor requires the transferee to agree to maintenance or integration services or other consideration (such as providing source code)."[188] The ALI Principles Reporter explains:

> Terms-of-use agreements attached to open-source software also may constitute consideration under the *ALI Principles*, although the issue of whether some open-source licenses are contracts is controversial. General contract law distinguishes between a condition for a gift and consideration, but in the typical case, a court finds consideration if a condition constitutes more than is necessary to transfer a gift. Terms-of-use agreements, such as requiring the distribution of derivative software under the same terms as the initial transfer, are not necessary to convey software and therefore should constitute consideration under general contract law.[189]

Regardless of its extensive scope and guidance, no U.S. court has relied upon the Principles as a source of law since its publication in 2009. However, in *Wong v. Truebeginnings LLC*,[190] a federal court drew upon the Principles in its decision, where there were genuine issues as to whether a user agreed to an online contract:

---

185. Robert A. Hillman & Maureen O'Rourke, *Defending Disclosure in Software Licensing*, 78 U. CHI. L. REV. 95, 104 n.53 (2011).

186. PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, § 2.02(d) (noting that standard terms are subject to "invalidating defenses supplied by these Principles or outside law").

187. *See* UCITA, *supra* note 163; PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, § 2.02 cmt. d ("General contract law asks whether a reasonable person of average intelligence and education can understand the language with ordinary effort . . . .").

188. PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, § 1.06 cmt. d.

189. Hillman, *supra* note 177, at 675 (citing PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, § 1.06 cmt. d.).

190. No. 3:07-CV-1244-N, 2008 WL 11348237 (N.D. Tex, Dec. 2, 2008).

> The latest draft of the American Law Institute's ("ALI") work-in-progress Principles of the Law of Software Contracts characterizes clickwrap agreements as more closely resembling paper standard-form procedures, while expressing concern that browsewrap insufficiently calls terms to the transferee's attention. Regarding the enforcement of electronic standard forms, the ALI draft accordingly proposes that transferees will be deemed to have adopted a standard form as a contract if, among other conditions, the transferee signifies agreement "at the end of or adjacent to the electronic standard form." . . . Such a condition is best met by a clickwrap, as opposed to a browsewrap, presentation of terms. Judges in this District have found the clickwrap versus browsewrap distinction persuasive.[191]

III. Article 2 Stretched to Software Licenses

A. The Rise of the Software Industry

> In 1969, the Justice Department filed its antitrust lawsuit against the industry giant, IBM, arguing that IBM's bundling of hardware and software was anticompetitive. IBM responded later that year by unbundling its charges for hardware, typically leased to customers, and software "services," now offered under separate pricing. Separate pricing for these "services" began as month-to-month leasing of the software, designed to avoid the implication that IBM was "selling" its code.[192]

IBM's decision to unbundle software from computer hardware launched the software industry.[193]

---

191. *Id.* at *2 (internal citations omitted).

192. Michael L. Rustad & Maria Vittoria Onufrio, *Reconceptualizing Consumer Terms of Use for a Globalized Knowledge Economy*, 14 U. PA. J. BUS. L. 1085, 1090 (2012) (quoting Michael J. Madison, *Reconstructing the Software License*, 35 LOY. U. CHI. L.J. 275, 311–12 (2003)).

193. *See* HANS-BERND KITTLAUS & PETER N. CLOUGH, SOFTWARE PRODUCT MANAGEMENT AND PRICING: KEY SUCCESS FACTORS FOR SOFTWARE ORGANIZATIONS 17 (2008) ("Pressed by the U.S. Department of Justice and facing forthcoming anti-trust law suits, IBM announced on June 23, 1969, that it would unbundle hardware and software in the future. This can be seen as the birth date of the software industry.").

In 1981, IBM's launch of the first personal computer (PC) was instrumental in the rise of the software industry.[194] "The first IBM PC, formally known as the IBM Model 5150, was based on a 4.77 MHz Intel 8088 microprocessor and used Microsoft's MS-DOS operating system."[195] The IBM PC "was widely copied ('cloned') and led to the creation of a vast 'ecosystem' of software, peripherals, and other commodities for use with the platform."[196]

"Software applications did not evolve as a separate industry until the mid-1980's."[197] In the 1970s and 1980s, IBM and its competitors (the Seven Dwarfs; including Burroughs, Control Data Corporation, General Electric, Honeywell, NCR, RCA and UNIVAC) marketed software applications as separate products.[198]

"If we fast-forward to the second decade of the new millennium, software shapes every aspect of the American experience."[199] *Bloomberg Business Week* listed Apple, Google, and Microsoft in their top twenty-five list of most innovative companies.[200] "Apple inaugurated the personal computer revolution in the 1970s by introducing the wildly popular Apple II

---

194. *See* 1 RODITTI & RUSTAD, *supra* note 13, at § 3.03.

> The great "unbundling" began in December 1968, when IBM, under the threat of an antitrust suit (subsequently instituted by the Department of Justice) announced that most future computer programs, as well as systems engineering activities and customer engineering courses furnished without charge would now require a separate payment in the United States. IBM's official unbundling occurred June 29, 1969, effective immediately for new orders and effective January 1, 1970 for customers with machines installed or on order.

195. *Timeline of Computer History*, COMPUTER HIST. MUSEUM, http://www.computerhistory.org/timeline/1981/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

196. *Id.*

197. MICHAEL L. RUSTAD, SOFTWARE LICENSING, CLOUD COMPUTING AGREEMENTS, OPEN SOURCE, AND INTERNET TERMS OF USE: A PRACTICAL APPROACH TO INFORMATION AGE CONTRACTS IN A GLOBAL SETTING § 1.02, 17 (2016–2017 ed.).

198. *Id.*

199. *Id.* at 3.

200. *See* Bruce Einhorn, *The 50 Most Innovative Companies*, BLOOMBERG BUSINESSWEEK (Apr. 15, 2010), https://www.bloomberg.com/news/articles/2010-04-15/the-50-most-innovative-companies (outlining the fifty most innovative companies of 2010 and explaining that a majority of said companies reside outside of the United States) (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

personal computer into the consumer marketplace."[201] Oracle, Computer Associates, and Apple "licensed software packages for personal computers that generated millions of dollars."[202] "Microsoft's early products were different variants of Microsoft BASIC which was the dominant programming language in late 1970s and early 1980s home computers such as Apple II (Applesoft BASIC) and Commodore 64 (Commodore BASIC), and were also provided with early versions of the IBM PC as the IBM Cassette BASIC."[203]

Microsoft, founded on April 4, 1975, is the largest software company in the world today.[204] "In 2017, Microsoft generated 89.95 billion U.S. dollars in revenue, a decrease from Microsoft's record year in 2015 when it reported 93.6 billion U.S. dollars in revenue."[205] To place these numbers in perspective, "the combined sale of software swelled from $2.7 billion in 1980 to $30 billion by 1990."[206] "In 2017, revenue from business intelligence and analytics software was expected to amount to 18.3 billion U.S. dollars."[207] By the new millennium, the software industry was America's third largest industry.[208]

---

201. RUSTAD, *supra* note 197, § 1.02, 18.

202. *Id.*

203. *The Personal Computer Revolution By Bill Gates*, EYERYS, https://www.eyerys.com/articles/people/personal-computer-revolution-bill-gates (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

204. *See Microsoft's Annual Revenue Worldwide, From FY 2002 to FY 2017 (in Billion U.S. Dollars)*, STATISTA, https://www.statista.com/statistics/267805/microsofts-global-revenue-since-2002/ (last visited Apr. 3, 2019) ("The Microsoft Office suite also remains the most widely used office software around the world with few comparable competitors in sight.") (on file with the Washington and Lee Law Review).

205. *Id.*

206. RUSTAD, *supra* note 197, § 1.02, 19.

207. *Worldwide Business Intelligence and Analytics Software Market Revenue from 2010 to 2020 (in Billion U.S. Dollars),* STATISTA, https://www.statista.com/statistics/294653/enterprise-software-revenue-worldwide/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

208. *See* Jon M. Garon, *Media & Monopoly in the Information Age: Slowing the Convergence at the Marketplace of Ideas*, 17 CARDOZO ARTS & ENT. L.J. 491, 574 (1999) (stating that by 1996 computer software was ranked as the "third largest segment of the U.S. economy, behind only the automotive industry and

"The first application software . . . [was] developed in the 1960s," and, by 2004, "[p]ackaged software applications alone accounted for $179 billion in revenues."[209] Graphics suites, such as Adobe Creative Suite, included software programs for creating and editing images, while Sony Audio Master Suite was used for audio production.[210] From 2010 to 2015, the "worldwide packaged software revenue" increased from 316 billion to 430.9 billion.[211]

"Software licensing has evolved as a leading means of transferring value in an increasingly information-based economy. In the new information-based economy, access to software, data, and entertainment products challenges the sale or lease of durable goods as the economic base."[212] The evolution of the software license coincided with the development of application software, defined as software whose purpose is to perform specific tasks as a separately commodified product.[213]

The software license enabled software application developers to commodify their product.[214] Under a license, the terms and conditions circumscribe the licensee's rights, and licensees do not own the software, but rather possess a usury right.[215] "Licensing

---

electronic manufacturing" (citations omitted)).

209. RUSTAD, *supra* note 197, § 1.04[2][b], 26–27.

210. *See id.* ("Application software performs specific tasks acting in conjunction with the system software, whose code operates the computer system.").

211. *See Global Packaged Software Revenue From 2010 to 2015 (in Billion U.S. Dollars)*, STATISTA, https://www.statista.com/statistics/208652/global-packaged-software-revenue-since-2010/ (last visited Apr. 3, 2019) (forecasting "the worldwide packaged software revenue from 2010 to 2015") (on file with the Washington and Lee Law Review).

212. Rustad & Onufrio, *supra* note 192, at 1094.

213. *See* Martin Campbell-Kelly, *Not All Bad: An Historical Perspective on Software Patents*, 11 MICH. TELECOMM. & TECH. L. REV. 191, 210 (2005) ("The lack of concern for intellectual property in software may seem surprising, but as late as 1970 manufacturer-supplied programs accounted for only about 3 percent of the cost of a computer. There was little economic incentive to press for an appropriate IP regime for software protection.").

214. *See* RUSTAD, *supra* note 197, § 1.05, 37 ("Licensing software permits software vendor [sic] to commodify their patented and copyrighted information technologies and services that they furnish.").

215. *See id.* at 38 ("The unique aspect of licensing is that it 'enables a split of ownership and user rights in the information, but unlike hard goods, information can be both transferred and retained.'" (citations omitted)).

evolved as a contracting form that gives licensees the right to use software or digital information for a designated period under specified conditions."[216]

B. Article 2 and Mass-Market Licenses

The absence of an alternative source of law has led courts to stretch Article 2 of the U.C.C. to software licensing. Courts have been willing to apply U.C.C. Article 2 to mass-produced, standardized or generally available software.[217] In mid-1980s, during the formative era of the software industry, courts made the decision to stretch Article 2 to mass-market software.[218] A commentator argues the courts took a wrong turn in applying Article 2 to software licenses:

> The result has been chaos for courts and practitioners trying to determine which contract law actually applies. At the very time when our economy is bursting with dizzying new types of information resources and information distribution methods, courts and practitioners are burdened with the increasingly unworkable consequences of inaccurate early choices and assumptions by some courts and use by some courts of the "predominant purpose" test to force cases into the boundaries of U.C.C. Article 2.[219]

The earliest mass-market agreement was the "box-top license that gave the consumer a right to use the software subject to the software publisher's terms and conditions."[220] Software publishers

---

216. *Id.* at 37.

217. *See, e.g.*, Data Processing Servs. v. L.H. Smith Oil Corp., 492 N.E.2d 314, 318–19 (Ind. Ct. App. 1986) (declining to apply Article 2 of the U.C.C. because the contract was for services rather than goods); Rottner v. AVG Techs. United States, Inc., 943 F. Supp. 2d 222 (D. Mass. 2013) ("[C]ourts nationally have consistently classified the sale of a software package as the sale of a good for UCC purposes.").

218. *See* Towle, *supra* note 25, at 553 ("By the late 1980s, one finds a series of decisions that merely assume a software license is within Article 2. . . ." (citations omitted)).

219. *Id.* at 535.

220. RUSTAD, *supra* note 197, § 1.06[2][b], 43.

typically included a shrinkwrap agreement slipped underneath the plastic surrounding the software package or included in the box.[221]

Courts were historically disinclined to enforce shrinkwrap agreements, because the terms or clauses of the agreements could not be reviewed until (1) the product was paid for and (2) the box was opened.[222] *ProCD, Inc. v. Zeidenberg*[223] was the first case to consider the enforceability of shrinkwrap licenses in a mass-market transaction.[224] The Seventh Circuit's companion cases of *ProCD, Inc.* and *Hill v. Gateway 2000*[225] were also the turning points in applying U.C.C. Article 2 to licenses.

In *ProCD, Inc.*, the Seventh Circuit held that where an individual purchased software in a box containing license terms, or displayed on the computer screen each time the user executed the software program, the user had sufficient opportunity to review the terms and thus, the user had the opportunity to return the software, making the user contractually bound after retaining the product.[226] The court applied U.C.C. Article 2 to a software licensing dispute, stating the court "treat[s] the licenses as ordinary contracts accompanying the sale of products, and therefore as governed by the common law of contracts and the Uniform Commercial Code."[227]

---

221. *Id.*

222. *See* Vault Corp. v. Quaid Software, Ltd., 847 F.2d 255, 270 (5th Cir. 1988) (affirming a district court decision ruling that shrinkwrap was an unenforceable contract of adhesion and that Louisiana's Software License Enforcement Act validating shrinkwrap was preempted by the U.S. Copyright Act); Ariz. Retail Sys., Inc. v. Software Link, Inc., 831 F. Supp. 759, 766 (D. Ariz. 1993) (refusing to enforce terms of a shrinkwrap license because "whether the terms of the license agreement are treated as proposals for additional terms under U.C.C. § 2-207, or proposals for modification under U.C.C. § 2-209, the terms . . . are not a part of the agreement . . . ." (citation omitted)); Mark A. Lemley, *Terms of Use*, 91 MINN. L. REV. 459, 459–60 (2006) (surveying case law and concluding that prior to the mid-1990s, courts generally struck down shrinkwrap license agreements).

223. 86 F.3d 1447 (7th Cir. 1996).

224. 1 RODITTI & RUSTAD, *supra* note 13, § 8.10[3].

225. 105 F.3d 1147 (7th Cir. 1997).

226. *See ProCD*, 86 F.3d at 1452 ("[A]lthough . . . a contract can be, and often is, formed simply by paying the price and walking out of the store, the UCC permits contracts to be formed in other ways.").

227. *Id.* at 1450.

Hill v. Gateway was predicated upon contract formation where the terms are not read or understood.[228] In the modern commercial context, courts have recognized there are reasons to allow parties to contract without consideration of, and the possibility to negotiate, every term. "Cashiers cannot be expected to read legal documents to customers before ringing up sales."[229]

However, cases applying the "duty to read" principle to terms delivered after a contracting relationship has been initiated do not nullify the requirement that a consumer must be on notice of the existence of a term before he or she can be legally held to have assented to it. "While new commerce on the Internet [and elsewhere] has exposed courts to many new situations, it has not fundamentally changed the principles of contract."[230]

In *M.A. Mortenson Co. v. Timberline Software Corp.*,[231] the Washington Supreme Court applied U.C.C. Article 2 to uphold "layered contracts" between M.A. Mortenson Co., a contractor, and Timberline, a software licensor.[232] M.A. Mortenson purchased licensed computer software from Timberline through a third party dealer.[233] Due to a software defect, "Mortenson used the program to prepare a construction bid and discovered the bid was $1.95 million less than it should have been."[234] Mortenson filed suit against Timberline for breach of warranties.[235]

The trial court granted Timberline's motion for summary judgment because of a disclaimer provision in the shrinkwrap agreement.[236] The Washington Court of Appeals asserted U.C.C.

---

228. *See Hill*, 105 F.3d at 1148 ("[I]s the contract term-free because the order-taker did not read any terms over the phone and elicit the customer's assent?").

229. *Id.* at 1149.

230. Register.com, Inc. v. Verio, Inc., 356 F.3d 393, 403 (2d Cir. 2004).

231. 998 P.2d 305 (Wash. 2000).

232. *See id.* at 584 ("We conclude because [the code] allows a contract to be formed 'in any manner sufficient to show agreement . . . even though the moment of its making is undetermined,' it allows the formation of 'layered contracts' similar to those envisioned by *ProCD* [and] *Hill*. . . .").

233. *Id.* at 571.

234. *Id.*

235. *Id.*

236. *Id.*

Article 2 applied to licensing of software[237] and affirmed the order of summary judgment.[238] The court found the provision limiting, thus, Mortenson's damages to recovery of the purchase price was not unconscionable.[239]

To form a valid contract, "there must be an offer, acceptance, consideration, mutual assent and intent to be bound."[240] The rise of the Internet spurred the development of standard-form licensing contracts including clickwraps,[241] installwraps,[242] browsewraps,[243] website terms of use,[244] and service agreements. Website designers have created new contracting forms where the terms of use are being presented in a manner making it nearly impossible for users to manifest assent.[245] Clickwrap agreements, however, are generally found to be valid and enforceable, because the user's mouse click constitutes the affirmative manifestation of assent.[246]

---

237. *Id.* at 578.

238. *Id.* at 588.

239. *Id.*

240. Register.com, Inc. v. Verio, Inc., 356 F.3d 393, 427 (2d Cir. 2004).

241. *See* Christian H. Nadan, *Open Source Licensing: Virus or Virtue?*, 10 TEX. INTELL. PROP. L.J. 349, 362 n.53 (2007) (describing a clickwrap agreement as one "requiring the user to click an 'accept' button before the installation will conclude (sometimes called an 'installwrap' license)").

242. *Id.*

243. *See* Lemley, *supra* note 222, at 460 ("'[B]rowsewrap' licenses [are those] in which the user does not see the contract at all but in which the license terms provide that using a Web site constitutes agreement to a contract whether the user knows it or not.").

244. *See id.* ("Collectively, . . . shrinkwrap, clickwrap, and browsewrap licenses [are all] 'terms of use,' because they control (or purport to control) the circumstances under which buyers of software or visitors to a public Web site can make use of that software or site.").

245. *See id.* at 462 (discussing how courts are less likely to enforce obscure licenses against individual consumers, although they "presume that businesses know what they are doing . . . [and] [s]ophisticated economic entities are unlikely to persuade a court that a term is unconscionable.").

246. *See, e.g.*, Small Justice LLC v. Xcentric Ventures LLC, 99 F. Supp. 3d 190, 196 (D. Mass. 2015) ("Clickwrap agreements are generally upheld because they require affirmative action on the part of the user."), *amended*, No. 13-CV-11701, 2015 U.S. Dist. LEXIS 132910, 2015 WL 5737135 (D. Mass. Sept. 30, 2015); Bassett v. Elec. Arts, Inc., 93 F. Supp. 3d 95, 104 (E.D.N.Y. 2015) ("Here, Plaintiff manifested assent to the agreement to arbitrate when he clicked 'I Accept' during both the registration process and when later confronted with updated Terms of Service, and when he did not opt-out of the arbitration agreement using the process described in the arbitration clause.").

In *i.Lan Sys. v. Netscout Serv. Level Corp*,[247] the United States District Court in Massachusetts applied Article 2 to uphold a clickwrap agreement.[248] In *i.Lan*, the court concluded, under U.C.C. Article 2, the treatment of a clickwrap license agreement best meets the expectations of the parties in business transactions.[249] The district court stated, "Despite Article 2's requirement of a sale, courts in Massachusetts have assumed, without deciding, that Article 2 governs software licenses."[250]

In *Rottner v. Avg Techs. USA Inc.*,[251] "an Australian company that designs creates, sells, and licenses computer software, is responsible for the design and development of the architecture underlying PC TuneUp."[252] Rottner installed PC TuneUp after his "computer began malfunctioning—its speed and performance decreased, and the system sometimes hanged when opening programs."[253]

Rottner read advertisements for PC TuneUp claiming, "PC TuneUp would boost internet speed, eliminate freezing and crashing, optimize disk space and speeds, extend battery life, protect privacy, monitor hard drive health, and restore the PC to its peak performance."[254] Rottner first tried the free version, and

---

247. 183 F. Supp. 2d 328 (D. Mass. 2002).

248. *See id.* at 338

> The Court will enforce NextPoint's clickwrap license agreement for two reasons. First and foremost, the Court agrees with those cases embracing the theory of ProCD. . . . Second, . . . the Court would hold that i.LAN implicitly accepted the clickwrap license agreement because its additional terms were not material. . . . In other words, there can be no unreasonable surprise or hardship to i.LAN from enforcing the limitation of liability.

249. *Id.*

250. *Id.* at 331 (citing Novacore Techs., Inc. v. GST Commc'ns Corp., 20 F. Supp. 2d 169, 183 (D. Mass. 1998), *aff'd*, 229 F.3d 1133 (1st Cir. 1999) (emphasis removed); VMark Software, Inc. v. EMC Corp., 642 N.E.2d 587, 590 n.1 (1994); USM Corp. v. Arthur D. Little Sys., Inc., 546 N.E.2d 888, 894 (1989)).

251. 943 F. Supp. 2d 222 (D. Mass. 2013).

252. *Id.* at 224.

253. *Id.*

254. *Id.* at 225.

later purchased and installed the full version of PCTuneUp, but his computer problems were not resolved.[255]

The court applied a case-by-case analysis in extending U.C.C. Article 2 to apply to the PC TuneUp software transaction and found that PC TuneUp is a "generally available standardized software."[256] The court concluded, "[t]he sale of PC TuneUp is more like the sale of a tangible good—it is 'movable at the time of identification to the contract for sale'," noting "Rottner was able to download and install the full version of PC TuneUp after a one-stop payment over the internet."[257] The court applied the predominant purpose test, finding PC TuneUp was "predominantly like the sale of a good rather than the provision of services."[258]

Applying the U.C.C. warranty provisions,[259] the court found Rottner failed to give the software maker notice of his breach of warranty claim, and was thus barred from pursuing a remedy:

> Defendants point out Rottner does not allege a material defect in the delivery medium, and does not identify any applicable specifications to which PC TuneUp allegedly fails to conform. Moreover, even assuming Rottner made out a claim, he failed to provide adequate pre-suit notice of the defects required by Del. Code tit. 6, § 2-607(3) (a) ("[T]he buyer must within a reasonable time after he discovers or should have discovered any breach notify the seller of breach or be barred from any remedy.").[260]

C. Article 2 and Custom Software Licensing

Some courts went so far as to stretch U.C.C. Article 2 to software development agreements with the intention of creating custom software for a specific customer.[261] In *Audio Visual Artistry*

---

255. *Id.*

256. *Id.* at 230.

257. *Id.*

258. *Id.*

259. *Id.* at 231.

260. *Id.*

261. *See* Pearl Invs., LLC v. Standard I/O, Inc., 257 F. Supp. 2d 326, 353 (D. Me. 2003) (developer's agreement to create software "from scratch (concept to realization) for which it would be paid on a time and materials basis" was a contract for services); Surplus.com v. Oracle Corp., No. 10 CV 03510, 2010 WL 5419075, *1 (N.D. Ill. Dec. 23, 2010) (applying U.C.C. Article 2 to Surplus.com's purchase of "a software program called 'Dynamic Pricing Engine and *e* Auction

v. Tanzer,[262] Tanzer filed suit because the programming he purchased was unstable and the system could not be debugged in his smart home.[263] The court applied U.C.C. Article 2, after determining the predominant purpose of the contract was for the sale of goods, thus ruling that U.C.C. Article 2 applied to a smart home.[264] The court found the language of the contract was evidence the sales of goods predominated, noting:

> Throughout the contract, Mr. Tanzer is referred to as the "purchaser," [which indicates] a sale of goods contract. . . . In various sections, the contract states that: (1) ". . . AVA agrees to deliver and install equipment included in the proposal;" (2) "AVA retains ownership of the equipment until contract is paid in full;" (3) "Delays . . . by parties other than AVA that prohibit proper installation of delivered equipment shall not delay payment . . . ;" (4) "Prices are subject to change on items . . . between the time of execution of this contract and the delivery of goods;" (5) "All pre-paid goods shall be delivered at the price agreed;" (6) "Model numbers may change . . . therefore Product delivered may not . . . be the same model number agreed to in the Proposal;" and (7) "Final installation of most electronic hardware corresponds with purchaser['s] actual move-in date. . . ." Furthermore, the contract incorporates, by reference, the earlier proposal, which sets out the specific equipment that AVA would install in the Tanzer home.[265]

The court found the nature of AVA's business to be similar to the sale of a computer integrated system, whereas the "installation and service that AVA performs is incidental to the overarching purpose of its business, which is to sell 'smart home' components."[266] Finally, the court noted the amount paid for goods by Mr. Tanzer far exceeded the amount for services on AVA's

---

MME, Version 1.3 software' from Siebel Systems, Inc., which in turn ultimately became Oracle America").

262. 403 S.W.3d 789 (Tenn. Ct. App. 2012).

263. *Id.* at 791.

264. *Id.* at 805.

265. *Id.* at 800 (emphasis removed).

266. *Id.* at 803.

invoice.[267] The court thus extended U.C.C. Article 2 to a custom software development agreement.[268]

In *Springbrook Software, Inc. v. Douglas County*,[269] Springbrook Software, Inc. provided "licensed software applications, technology solutions and professional services to local governments, utilities and special districts."[270] Springbrook filed suit against both Douglas County and the city of Superior for breach of contract under an agreement for the purchase of Springbrook's financial system software to replace their outdated financial system.[271] "Douglas County was particularly interested in finding new highway department software that could be used to report certain mandated information to the Wisconsin Department of Transportation."[272]

Douglas argued, "[t]heir contract with Springbrook was a service contract and therefore the economic loss doctrine does not apply."[273] Springbrook argued U.C.C. Article 2 applied to their contract to supply software.[274] The court applied the predominant purpose test finding the parties intended a contract for goods

---

267. *See id.* at 804

> In this case, the trial court found that the costs of labor and services were "insignificant" compared to the cost of the equipment. As set out above, under the original contract, equipment sales constituted $56,375 of the total price of $71,915 (before taxes); on the other hand, labor accounted for only $9,880. In the final invoice, equipment totaled $89,640.03 of the total contract price of $109,830.03 (before taxes), with labor constituting only $13,260.00. Viewed as a percentage, equipment constitutes roughly 82% of the final contract price. Accordingly, this factor weighs heavily in favor of a finding that the contract was predominantly for the sale of goods.

268. Whether contracts for smart devices are for goods or services may raise many commercial law issues. *See* Stacy-Ann Elvy, *Hybrid Transactions and the Internet of Things: Goods, Services or Software?*, 74 WASH. & LEE L. REV. 77, 130–34 (2017) (citing DOUGLAS J. WHALEY & STEPHEN M. MCJOHN, PROBLEMS AND MATERIALS ON COMMERCIAL LAW 32 (11th ed. 2016)) (discussing the complexities of distinguishing between goods or services with regards to software).

269. No. 13-cv-760-slc, 2015 U.S. Dist. LEXIS 62566 (W.D. Wisc. May 13, 2015).

270. *Id.* at *4.

271. *Id.* at *1–2.

272. *Id.* at *4.

273. *Id.* at *34.

274. *Id.*

under Article 2. The court noted the language of the parties' contract supported the conclusion.

> The parties also negotiated a detailed Software License Agreement Addendum setting forth the various terms and conditions of defendants' license to Springbrook's software. Reading the Agreement as a whole, it supports the conclusion that the parties' primary goal was to contract for the sale of a software package as opposed to services.
>
> The parties' billing arrangement also supports the conclusion the predominant purpose of the Agreement was the provision of a good. Springbrook did not bill defendants on an hourly basis but rather charged a lump sum for each software module, with additional sums due for software maintenance fees, project management and training services. The first Order Form signed by the parties on October 5, 2011 shows that the $399,000 in fees payable by defendants on that date, two-thirds—$265,500—was for software licenses.[275]

The court acknowledged, "A significant amount of the fees *owed* under the Agreement are for Springbrook's services," but the "services were incidental to and supportive of the primary purpose of the Agreement."[276] "As noted above, the bulk of the fees owed by defendants were for the licensed software products and their maintenance fees. Where services were called for, such as training and consulting, they were charged as a flat fee, not on the basis of time."[277] The court concluded the "parties' Agreement is predominantly a contract for licensed software defined as a product," and applied the economic loss doctrine, dismissing the defendants' tort claims for fraudulent inducement and misrepresentation.[278]

In these and other cases, courts have had little choice but to make do with U.C.C. Article 2 as the law governing software contracts, in the absence of specialized laws. However, it is a legal fiction that software licensing and cloud computing involve

275. *Id.* at *38.
276. *Id.* at *39.
277. *Id.* at *40.
278. *Id.* at *41.

tangible goods.[279] As such, U.C.C. Article 2 cannot serve as a continuing contract roadmap for software licensing and cloud computing access contracts.

U.C.C. Article 2 does not blend well with software licensing and is even less relevant to SaaS. U.C.C. Article 2 has been stretched to its limits by the courts, and new law specifically regulating these two leading software contracting methods is indispensable.

The drafters of the U.C.C. called for a commercial law code to be liberally construed and applied to promote its three underlying purposes and policies: "(1) to simplify, clarify, and modernize the law governing commercial transactions; (2) to permit the continued expansion of commercial practices through custom, usage, and agreement of the parties; and (3) to make uniform the law among the various jurisdictions."[280]

"We live in a world where 'data-driven economic activities'—the production, distribution and use of digital information of all types—are the leading edge of economic growth."[281] Parts III and IV of this Article propose two new U.C.C. Articles which would bring clarity and uniformity to software licensing and cloud computing contracts, as once envisioned by the U.C.C. drafters.

---

279. *See* MORRIS R. COHEN, LAW AND THE SOCIAL ORDER 126 (1933) ("Legal fiction is the mask that progress must wear to pass the faithful but blear-eyed watchers of our ancient legal treasures. But though legal fictions are useful in thus mitigating or absorbing the shock of innovation, they work havoc in the form of intellectual confusion."); *see also* Ken Moon, *Revisiting* UsedSoft v. Oracle*: Is Software Property and Can It Be Sold?*, 18 COMPUTER L. REV. INT'L 113 (2017) (describing software as an intangible asset treated like a physical good).

280. U.C.C. § 1-103(a) (AM. LAW INST. & UNIF. LAW COMM'N 2001).

281. MICHAEL MANDEL, PROGRESSIVE POL'Y INST., BEYOND GOODS AND SERVICES: THE (UNMEASURED) RISE OF THE DATA-DRIVEN ECONOMY 1 (2012), https://www.progressivepolicy.org/wp-content/uploads/2012/10/10.2012-Mandel_Beyond-Goods-and-Services_The-Unmeasured-Rise-of-the-Data-Driven-Economy.pdf.

IV. New U.C.C. Article 2B For Software Licensing

A. Defining Software Licenses

Software is an intangible asset, consisting of binary instructions, codes, and routines "used to cause a computer to perform a specific task or function."[282] Unlike the sale of goods, licensing does not involve the passage of title from the licensor to the licensee.[283]

Software differs from the sale of goods because it confers a lower-order property interest as an access contract, giving the licensee the right to use intellectual property owned by the licensor.[284] A software license grants a use right to the software or other digital information for a designated period under specified conditions.[285] Similar to leases, the licensing of software validates the legal concept of the right to use property without the passage of title.

---

282. Northeast Datacom Inc. v. City of Wallingford, 563 A.2d 688, 689 n.1 (1989).

283. *See* H. WARD CLASSEN, AM. B. ASS'N, A PRACTICAL GUIDE TO SOFTWARE LICENSING FOR LICENSEES AND LICENSORS: ANALYSES AND MODEL FORMS 223 (2d ed. 2007) (describing that the licensor retains title).

284. *See* Nancy M. Kim, *The Software Licensing Dilemma*, 2008 B.Y.U. L. REV. 1103, 1103

> Software licensing occupies a unique position at the intersection of contracts, intellectual property, and commercial law doctrines. The difficulty in analyzing software licensing issues directly results from the sui generis nature of software that leads to the construct of what I refer to as the "software licensing dilemma"—if software is sold and not licensed, the licensor's ability to control unauthorized uses of its product is significantly curtailed; on the other hand, if software is licensed and not sold, the licensee's rights under the agreement are unduly restricted.

285. *See* RUSTAD, *supra* note 197, § 2.02[6], 77

> In a software license agreement, the purchaser of a software program obtains a license to copy and use that software while agreeing to abide by the terms of use or conditions. If the licensee either refuses to agree to the terms of the software license or violates the term of that license, the licensee is prohibited from using or continuing to use that software program, even if the licensee is in physical possession of the specific program or tangible media.

While the consumer's title to the tangible copy of the software (the purchased CD-ROM, for example) may be absolute, it does not confer property rights upon the intangible code making up the software.[286] Increasingly, there is no tangible media associated with the downloading of software. In the event of a default, "software's short shelf life makes it difficult to realize liquidation value."[287] Software can be copied at no marginal cost; therefore, licensing is the only efficient method of realizing liquidation value.[288]

Licenses are a specialized contractual form, protecting intellectual property rights to enable vendors to realize their investments in developing code.[289] A software license is "a conveyance of abstract, intangible rights with respect to the licensed intellectual property. The rights conveyed and (if any) reserved determine what the licensee can lawfully do with the licensed intellectual property. The essence of a software license is the licensor contractually grants the licensee the right to use software, databases, and other content. Unlike an assignment, the licensor "retains more rights in the subject matter of the license."[290] Rustad and Onufrio state:

---

286. *See* Moon, *supra* note 279 (comparing software to the copyrighted contents of physical books which may be bought or sold).

287. Rustad & Onufrio, *supra* note 12, at 30; *see also* Ronald J. Mann, *Secured Credit and Software Financing*, 85 CORNELL L. REV. 134, 139 (1999) (explaining that "[t]he rapid development curve for software produces a broad gap between" a software's market value and its value to the original end-user, who may continue to use the product after it becomes obsolete).

288. *See* Rustad & Onufrio, *supra* note 12, at 30 (discussing licensing liquidation value).

289. *Id*; *see also* Kim, *supra* note 284, at 1113

> Software licensing raises many complex issues related to both the nature of software and the manner in which software is distributed. Software does not fit perfectly into preexisting legal categories because software is both tangible and intangible while being both privately owned and publicly distributable. Although the intellectual property constituting the underlying software code is legally "owned" by the software producer, the medium upon which the software is contained can be readily transferred by others (i.e., non-owners of the software code).

290. RAYMOND T. NIMMER, LICENSING OF INTELLECTUAL PROPERTY AND OTHER INFORMATION ASSETS 3 (2d ed. 2004).

> Software producers sought to avoid the reach of the first sale doctrine[291] by characterizing the original transaction between the software producer and the software rental company as a license, rather than a sale, and by making the license personal and non-transferable. Licensing is far more flexible than assignments and sales because, under licensing, the licensor may control the *permitted* locations, duration of use, number of users, and the permitted uses of the software. A seller of an iPod is unlikely to specify the consumer may only use the device for six months. In addition, there is no second-hand software market because of anti-assignability and anti-transfer provisions. Location and use restrictions are necessary tools for software makers to utilize when realizing their investment in developing intangible information assets.[292]

"Essentially, a license is a contract that gives the licensee a right to use software for a specific term whereby the licensor agrees not to sue them for copyright (or patent infringement)."[293] The classic definition of a license is "a mere waiver of the right to sue" for the infringement of copyrights or patents in the underlying intellectual property.[294] More modernly, a license is defined as a conditional transfer of information, or a grant of restricted contractual rights, or the permission to use information.[295]

Licensing agreements, in their most basic form, include two parties, a licensor and a licensee. A software "licensor" is the "person obligated by agreement to transfer or create rights in, or to give access to or use of, computer information or informational rights in it under an agreement."[296] The licensor is obligated by the

---

291. *See infra* note 298 (defining the "first sale" doctrine). The first sale doctrine was first recognized by the U.S. Supreme Court in 1908. *See* Bobbs-Merrill v. Straus, 210 U.S. 339 (1908) (holding that a publisher could not place restrictions on the resale of goods). The U.S. Copyright Act codified the first sale doctrine at 17 U.S.C. § 109(a). With licensing, there is a "first license," but not a "first sale"; *see also* Vernor v. Autodesk, Inc., 621 F.3d 1102, 1112 (9th Cir. 2010) (holding that Vernor infringed Autodesk's copyright when he resold a software application on eBay).

292. Rustad & Onufrio, *supra* note 12, at 31–32.

293. *See* 1 RUSTAD, *supra* note 116, § 8.01 (explaining software licensing).

294. De Forest Radio Telephone Co. v. United States, 273 U.S. 236, 242 (1927).

295. UCITA, *supra* note 163, § 102(a)(41).

296. *Id.* § 102(a)(43).

license to give access to the licensee under a contractual agreement. In contrast, a "licensee" is the person who acquires the right to access software under an agreement. A licensee is defined as "a person entitled by agreement to acquire or exercise rights in, or to have access to or use of, computer information under an agreement."[297]

In the 1970s and 1980s, shortly after software publishers commodified software as a separate product, licenses began to evolve. In the 1980s, software publishers began using licensing to bypass copyright law's first sale doctrine,[298] which allows the owners of copies of copyrighted works to resell their copies.[299] With a sale of goods, the first sale doctrine grants the buyer fuller usage rights with the purchased product including the right to transfer, assign, or sell the tangible goods.

In contrast, software customers are only granted a license. In *Microsoft Corp. v. Harmony Computers & Electronics*,[300] the court held Microsoft's software was not subject to the first sale doctrine because it licensed its products rather than selling them.[301] If the licensee of a software product resells a product, the seller infringes on the copyright because this action will exceed the scope of the license agreement.[302]

Consumers often say they purchased a software package; however, this is not legally correct because mass-market software is licensed, not sold. If sold, a buyer would have both title to the

---

297. *Id.* § 102(a)(42) (2002).

298. The first sale doctrine of copyright law gives the owner of a lawfully made copy the power to "'sell or otherwise dispose of the possession of that copy' without the copyright holder's consent." Step-Saver Data Sys., Inc. v. Wyse Tech., 939 F.2d 91, 96 n.7 (3d Cir. 1991) (quoting Bobbs-Merrill Co. v. Straus, 210 U.S. 339, 350 (1908) (holding that a copyright owner's exclusive distribution right is exhausted after the owner's first sale of a particular copy of the copyrighted work).

299. *See* U.S. Copyright Act, 17 U.S.C. § 109(a) (2012) ("[T]he owner of a particular copy . . . lawfully made under this title . . . is entitled, without the authority of the copyright owner, to sell or otherwise dispose of the possession of that copy. . . .").

300. 846 F. Supp. 208 (E.D.N.Y. 1994).

301. *Id.* at 212–13 ("Entering license agreement is not 'sale' for purposes of first sale doctrine." (citing ISC-Bunker Ramo Corp. v. Altech, Inc., 765 F. Supp. 1310, 1331 (N.D. Ill. 1990))).

302. *See, e.g.*, Vernor v. Autodesk, Inc., 621 F.3d 1102, 1104 (9th Cir. 2010) (holding that Vernor infringed Autodesk's copyright when he resold software products on eBay).

software and the right to make unlimited copies with impunity.[303] A buyer could purchase a single copy of software and post the copy on the Internet while charging users for access.[304] With mass-market software, however, the software publisher still owns the software and merely allows consumers use of the software subject to terms and conditions. Software licensing naturally imposes conditions on use after the application is delivered to the licensee.[305]

To constitute a license, the software maker must place meaningful restrictions on the licensee's use of the software after delivery.[306] Simply labeling an agreement as a license does not automatically make the agreement a license.[307] To circumvent the first sale doctrine, the agreement must be a true license, imposing certain restrictions on use, rather than a sales agreement.[308]

---

303. *See, e.g.*, Vangie Beal, *Is Software Ownership the Same as Licensing?*, WEBOPEDIA (June 24, 2010), https://www.webopedia.com/DidYouKnow/Hardware_Software/OwningSoftware.asp (last visited Apr. 3, 2019) (explaining that a software license conveys usage rights and not ownership rights) (on file with the Washington and Lee Law Review).

304. *See, e.g.*, *Step-Saver*, 939 F.2d at 96 n.7 (subjecting software licenses to the first sale doctrine would lead to software "rental stores" that would purchase software copies from developers and rent them to third-parties).

305. *See* discussion *infra* Part III.D.3 (licensing imposes restrictions on software use).

306. *See* Adobe v. Christenson, 809 F.3d 1071, 1078 (9th Cir. 2011) ("To determine whether there is a legitimate license, we examine whether "the copyright owner (1) specifies that the user is granted a license; (2) significantly restricts the user's ability to transfer the software; and (3) imposes notable use restrictions.").

307. *See* UCITA, *supra* note 163, § 102(a)(41)

> "License" means a contract that authorizes access to, or use, distribution, performance, modification, or reproduction of, information or informational rights, but expressly limits the access or uses authorized or expressly grants fewer than all rights in the information, whether or not the transferee has title to a licensed copy. The term includes an access contract, a lease of a computer program, and a consignment of a copy. The term does not include a reservation or creation of a security interest to the extent the interest is governed by [Article 9 of the Uniform Commercial Code].

308. *See* discussion *supra* notes 298–302 and accompanying text.

In addition to imposing different kinds of restrictions, software publishers typically have complex fee schedules that vary depending upon whether the user is a large corporation, a community library, a small business, or a noncommercial user.[309] A company's licensing fees often reflect the product chosen, the identity of the user, and the number of users for the chosen products.[310]

Software publishers and content creators can charge different prices for licenses while retaining exclusive reproduction rights as well as other rights under copyright law.[311] For enterprises, royalties are typically based upon such variables as the number of employees or the revenues of the licensee.[312]

Software can be proprietary or open source. "Open source" is a method of developing and licensing source code that enables the user community to improve software products and make those innovations available to other users in the community.[313] "It has been humorously noted that the difference between open source and proprietary licenses is simple."[314]

---

309. *See* ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, 1449 (7th Cir. 1996) (noting licensing enables software to be sold for a higher price for commercial users, while the same product may be priced lower if use restrictions are enforceable and the license is restricted to non-commercial use).

310. *See generally* H. WARD CLASSEN, AM. B. ASS'N, A PRACTICAL GUIDE TO SOFTWARE LICENSING FOR LICENSEES AND LICENSORS 3–21 (6th ed. 2016) (discussing the software negotiation and contracting process).

311. *See* 17 U.S.C. § 106 (2012). Copyright law gives a copyright owner remedies when any of the rights under 17 U.S.C. § 106, namely the exclusive right to distribute copyrighted material, are violated. *Id.* Software code is copyrightable as literary works. *See* Atari Games Corp. v. Oman, 888 F.2d 878, 885 n.8 (D.C. Cir. 1989) (granting "[w]ritten computer programs" copyright protection). If a licensee of software or other content exceeds the scope of the license, he or she is liable for infringement. *See generally* SoftMan Products Co. v. Adobe Sys., Inc., 171 F. Supp. 2d 1075, 1082–83 (C.D. Cal. 2001) (holding the defendant's piecemeal distribution of unbundled copies of Adobe software against terms of its EULA did not violate copyright law since the first sale doctrine of 17 U.S.C. § 109 applied).

312. CLASSEN, *supra* note 310.

313. *See* Jay P. Kesan & Rajiv C. Shah, *Deconstructing Code*, 6 YALE J.L. & TECH. 277, 350 (2003–2004) (retelling the story of the open source software movement and its accomplishments).

314. *See* John Tsai, *For Better or Worse: Introducing the GNU General Public License Version 3*, 23 BERKELEY TECH. L.J. 547, 549 (2008)

> The free software movement began in the 1970's when Richard M. Stallman worked as a programmer at MIT's Artificial Intelligence lab.

"Open source licenses allow everything except that which is forbidden, while proprietary licenses prohibit everything except that which is allowed."[315] "While an open source license must guarantee that source [code] is readily available," the license may require that the software "be distributed as pristine base sources plus patches."[316] In this way, authors' reputations are protected since changes can be readily distinguished from the base source.[317]

Millions of users, from individuals to massive global enterprises, have deployed open source software. Its use by the industry and end-user companies around the globe is growing at an exponential rate.[318] Open source programmers have developed a long list of open source licensed products. Products that have a high rate of visibility and adoption in the marketplace include the

---

> Stallman decided to solve a problem with the lab's centralized printer: paper jams. With access to the printer's software source code, Stallman modified the printer software so that it would notify all lab members when the printer jammed. When the lab received a new Xerox printer, Stallman tried to improve it in the same manner. But Xerox would not release the printer's source code. Stallman's encounter with this proprietary software model marked the beginning of his vision of the *Open Source and the General Public License* free software movement. He believed proprietary software was fundamentally incompatible with his conception of the "golden rule." For Stallman, sharing source code was, and is, a moral obligation.

315. F. LAWRENCE STREET, MARK P. GRANT & SANDRA SHEETS GARDINER, LAW OF THE INTERNET at § 14.01 at 14-2, n.2 (2012) (listing and discussing open source licenses).

316. *The Open Source Definition (Annotated) Version 1.9*, OPEN SOURCE INITIATIVE, https://opensource.org/osd-annotated (last visited Apr. 3, 2019) (outlining distribution terms with which open-source software must comply) (on file with the Washington and Lee Law Review).

317. *Id.* The Open Software Initiative (OSI) contends that to get the maximum benefit from the process, the maximum diversity of persons and groups should be equally eligible to contribute to open sources. *Id.* OSI recognizes that some countries, including the United States, have export restriction for certain software. *Id.* "An OSD-conformist license may warn licensees of applicable restrictions and remind them that they are obliged to obey the law; however, it may not incorporate such restrictions itself." *Id.*

318. *See, e.g.*, Owen Williams, *Apple Announces Swift 2 Shall Be Open Sourced*, THENEXTWEB (June 8, 2015, 4:16 PM), https://thenextweb.com/apple/2015/06/08/apple-announces-swift-2-will-be-open-sourced/ (last visited Apr. 3, 2019) (reporting Apple's decision to open-source its Swift programming language) (on file with the Washington and Lee Law Review).

Apache web server,[319] the Linux operating system,[320] the Eclipse development platform,[321] the scripting language PERL,[322] and the popular email server Sendmail.[323] Open source license agreement must satisfy the following criteria:

> 1. Free Redistribution
>
> The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.
>
> 2. Source Code
>
> The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

---

319. *See What is the Apache HTTP Server Project?*, APACHE HTTP SERVER PROJECT (2018), https://httpd.apache.org/ABOUT_APACHE.html (last visited Apr. 3, 2019) ("The Apache HTTP Server Project is an effort to develop and maintain an open-source HTTP server for modern operating systems including UNIX and Windows.") (on file with the Washington and Lee Law Review).

320. *See What is Linux?*, OPENSOURCE, https://opensource.com/resources/linux (last visited Apr. 3, 2019) (describing Linux as "the best-known and most-used open source operating system") (on file with the Washington and Lee Law Review).

321. *See About the Eclipse Foundation*, ECLIPSE FOUND., https://www.eclipse.org/org/ (last visited Apr. 3, 2019) (describing Eclipse as an "environment for open source software collaboration and innovation") (on file with the Washington and Lee Law Review).

322. *See About Perl*, PERL (2018), https://www.perl.org/about.html (last visited Apr. 3, 2019) ("Perl is Open Source software, licensed under its Artistic License, or the GNU General Public License (GPL).") (on file with the Washington and Lee Law Review).

323. *See Sendmail Open Source*, PROOFPOINT (2018), https://www.proofpoint.com/us/open-source-email-solution (last visited Apr. 3, 2019) (describing Sendmail as a general-purpose internetwork email routing facility that supports many kinds of mail-transfer and delivery methods) (on file with the Washington and Lee Law Review).

3. Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

4. Integrity of The Author's Source Code

The license may restrict source-code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

5. No Discrimination Against Persons or Groups

The license must not discriminate against any person or group of persons.

6. No Discrimination Against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

7. Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

8. License Must Not Be Specific to a Product

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

9. License Must Not Restrict Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

10. License Must Be Technology-Neutral

No provision of the license may be predicated on any individual technology or style of interface.[324]

B. Updating the U.C.C. for Licensing

In 1939, Karl Nickerson Llewellyn, the first U.C.C. Reporter, wrote that commercial law must be updated from "horses" and "haystacks" to the commercial realities of the distribution of goods.[325] The U.C.C. was the foremost law reform updating contract law away from "horses" and "haystacks" to the necessities of the national distribution of durable goods.

For more than seven decades, the U.C.C. has governed the law of sales of tangible goods without substantial revision. However, while U.C.C. Article 2 mesh with the economic realities of mainframe computer systems sold in the 1950s and 1960s, it is inappropriate for licensing and SaaS, which involve the granting of certain rights on software, rather than the transfer of ownership on a tangible good.[326]

The widespread adoption of the U.C.C. by state legislatures brought greater uniformity to American commercial law.[327] That said, ongoing application of Article 2 to software licenses, SaaS, and cloud computing, creates unforeseeable consequences and little guidance for both providers and customers.[328] This Article proposes two new Articles that would bring the U.C.C. up to date with the latest technological developments.

---

324. *The Open Source Definition*, *supra* note 316.

325. *See* Karl Nickerson Llewellyn, *The First Struggle to Unhorse Sales*, 52 HARV. L. REV. 873, 880–87 (1939) (describing the need to "unhorse" sales law, i.e., divorcing sales law from laws written for pre-industrial era economies that contemplated real estate, horses, and haystacks); *see also* Holly K. Towle, *The Politics of Licensing Law*, 36 HOUS. L. REV. 121, 134 (1999) (emphasizing "[t]he need to rewrite law to reflect new economies").

326. *See* discussion *supra* note 20.

327. *See* William A. Schnader, *A Short History of the Preparation and Enactment of the Uniform Commercial Code*, 22 U. MIAMI L. REV. 1, 5–9 (1967) (chronicling the adoption of the U.C.C.).

328. *See* discussion *infra* note 363 (suggesting that Article 2 is harmfully eroded when applied to software licensing).

Chart Three depicts the basic elements of the proposed Article 2B on Software Licensing and Article 2C on Cloud Computing. The purpose of new Article 2B and Article 2C is to bring up-to-date the U.C.C. to address modern computer contracts.[329] The new U.C.C. Articles for software contracting must create a balanced structure for these rapidly evolving computer contractual practices.

To achieve this balanced structure, the ALI and NCCUSL must appoint Article 2B and 2C Reporters, as well as a drafting committee, to work out well-aligned contract law defaults that favor neither party, thereby bringing common sense to the common law. A specific Article on software licensing can build upon both the provisions from old Article 2B, and the provisions of UCITA, but must ensure that licensing defaults protect both licensors and licensees. A quarter century has passed since the U.C.C. sponsoring organizations abandoned the old Article 2B project to update the code for licensing.[330]

Now is the right time to find consensus and allow the creation of a new U.C.C. Article 2B for software licensing reflective of the interests of licensors, licensees, and other stakeholders. Article 2C will adjust U.C.C. remedies for the unique features of SaaS access contracts. Similar to Articles 2 and 2B, the parties to a SaaS agreement must be able to count on a defined set of minimum adequate rights and remedies, such as the enforcement of liquidated damages.[331] Since U.C.C. Article 2 has little relevance to cloud computing,[332] existing industry standards may serve as guides in the drafting process.

---

329. *See* UCITA, *supra* note 163, at 1–3 (calling the proposed Act "[a] commercial contract code for computer information transactions").

330. *See* Press Release, *infra* note 350 (announcing that legal rules for computer information transactions would not be promulgated as Article 2B of the Uniform Commercial Code).

331. *See, e.g.*, U.C.C. § 2-718 (AM. LAW INST. & UNIF. LAW COMM'N 1977) (providing for damage liquidation under Article 2 contracts); UCITA, *supra* note 163, § 804 (proposing a provision for the enforcement of liquidated damages clauses under UCITA).

332. *See* discussion *infra* Part IV.D.2 (examining the relevance of U.C.C. Article 2 to cloud computing).

CHART THREE: THE TERRIBLE TWO'S: U.C.C. ARTICLES 2B AND 2C

Attribute	*Article 2B: Software Licenses*	*Article 2C: Cloud Computing*
Chief Contracting Type and Parties	License; Licensor, and Licensee	Software-as-a-Service Subscription Agreement; Cloud Provider and Customer
What is Delivered?	Historically, software was delivered in shrinkwrap jewel boxes with CD-ROMs. Today, software is delivered in diverse ways including: mailing or selling a CD-ROM, downloading software or installation by licensor at licensee's business premises.	Nothing is delivered to the customer. Typically, software and hardware are centrally hosted and maintained by the provider, the customer gets access to the software on a subscription basis during the paid period. Customers remotely access software applications and data is both available and accessible over the Internet. Nothing is delivered other than access codes; nothing is installed on the customer's servers or computers. The hardware, software, and data reside in the provider's "cloud."
Rights Conveyed to Customer	Software publisher grants the licensee the right to use one or more copies of the software under the	The provider will grant to the customer a limited license to (1) access the hosted application through user logins; (2) load customer data into the application; (3) use the application for the

	end-user license agreement (EULA), while ownership remains with the software publisher.	customer's own personal or internal business purpose; and (4) use the application subject to terms and conditions in the agreement. SaaS services will typically include basic monitoring, hosting and management services, installment activation, portal and business process training, and support services for the subscription period.
Transferability of Rights Granted	Typically, the licensee cannot assign or otherwise convey the license to any other party without the licensor's express consent.	The "aaS" in SaaS is an acronym for "As A Service," meaning the SaaS provider offers services, such as combined hosting and support services. The subscription service does not transfer hardware or software, so the customer does not possess tangibles or right to intangibles that may be transferred.
What is the Duration of the Agreement?	A license may be granted for a limited time, or perpetually, depending on the agreement between the licensor and the licensee.	Subscription defines the particular use and access rights to a given application granted by the provider to the customer. The term "subscription period" is the period during which the customer has access to use certain application features. Access grants can vary

		from one-time access grants to perpetual access grants.
Where Does the Software Reside?	Software applications are downloaded and installed on the customer's computer system.	Customers remotely access software and applications via the Internet and as a result are able to take advantage of a robust, relatively secure, scalable and highly available application without the cost and complexity of managing the software.
Multi-Tenant Model	No sharing of computer resources or software; installed, operated, maintained, and upgraded at the customer's premises.	"The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand."[333]
Services on Demand	No concept of elasticity of demand for software licensing.	In some cases, "capabilities can be elastically provisioned and released . . . automatically, to scale rapidly outward and inward commensurate with demand."[334]

333. *See Cloud Computing Definition*, SSH COMMS. SECURITY, INC., https://www.ssh.com/cloud/computing/definition (last updated Mar. 10, 2017) (last visited Apr. 3, 2019) (comparing definitions of cloud computing) (on file with the Washington and Lee Law Review).

334. *Id.*

C. The Need for a New Article 2B on Software Licensing

Most courts make a policy decision to apply U.C.C. Article 2 to software licensing because there is no specialized U.C.C. Article governing software. In *Advent Systems Limited v. Unisys Corporation*,[335] the court argued that, under the U.C.C., software fits within the definition of a "good."[336] The court pointed to reasons why courts stretch U.C.C. Article 2 to software transactions:

> The Code offers a uniform body of law on a wide range of questions likely to arise in computer software disputes: implied warranties, consequential damages, disclaimers of liability, the statute of limitations, to name a few. The importance of software to the commercial world and the advantages to be gained by the uniformity inherent in the U.C.C. are strong policy arguments favoring inclusion. The contrary arguments are not persuasive, and we hold that software is a "good" within the definition in the Code.[337]

Since the *Advent* court's decision, numerous other courts have stretched U.C.C. Article 2 to software licensing.[338] Nevertheless, for every court that finds "courts nationally have consistently classified the sale of a software package as the sale of a good for U.C.C. purposes,"[339] another finds "[t]he weight of authority favors application of common law and not the U.C.C. with regard to software licenses."[340]

---

335. 925 F.2d 670 (3rd Cir. 1991).

336. *Id.* at 676.

337. *Id.*

338. *See, e.g.*, Shema Kolainu-Hear Our Voices v. ProviderSoft, LLC, 832 F. Supp. 2d 194, 199–200 (E.D.N.Y. 2010) (categorizing a software licensing agreement as a "good" governed by Article 2); Richard A. Rosenblatt & Co., Inc. v. Davidge Data Sys. Corp., 743 N.Y.S.2d 471, 472 (N.Y. App. Div. 2002) (finding contract for installation of computerized securities trading system, including hardware and software user rights, to be a contract for the sale of goods).

339. *See* Rottner v. AVG Techs. USA, Inc., 943 F. Supp. 2d 222, 230 (D. Mass. 2013) (applying the predominance test to determine whether a contract for a given software is for goods or services).

340. *See* SAS Inst., Inc. v. World Programming Ltd., No. 5:10-25-FL, 2016 U.S. Dist. LEXIS 79230, at *31 (E.D.N.C. June 17, 2016). *Compare* Attachmate Corp. v. Health Net, Inc., No. C09-1161 MJP, 2010 WL 4365833, at *2 (W.D. Wash. Oct. 26, 2010) (finding Article 2 was not applicable to software licensing) *with Rottner*, 943 F. Supp. 2d at 230 (applying U.C.C. Article 2 to a software

Gap fillers in the U.C.C. are "statutory provisions that apply in the absence of contract disclaimers or provisions covering a particular subject."[341] In the absence of a specialized software contracting statute, many U.S. courts apply U.C.C. Article 2 to software licenses because Article 2 is familiar,[342] even while acknowledging the fact that software licenses are not technically within the scope of Article 2. For instance, Judge William Young extended Article 2 to a pure software license in *i.Lan Systems, Inc. v. Netscout Service Level Corp.*, because Article 2 was familiar[343] and there was no specialized software contracting statute for guidance.[344] The *i.Lan* court acknowledged it was applying U.C.C. Article 2 as a gap-filler because of the lack of an alternative specialized body of law governing licensing:

> The Court will examine the clickwrap license agreement through the lens of the U.C.C. Admittedly, the U.C.C. technically does not govern software licenses, and, very likely, does not govern the 1998 VAR agreement, however, with respect to the 1999 transaction; the U.C.C. best fulfills the parties' reasonable expectations. In Massachusetts and across most of the nation, software licenses exist in a legislative void. . . . At the same time, the Court will not overlook Article 2 simply because its provisions are imperfect in today's world. Software licenses are entered into every day, and business persons reasonably expect that *some* law will govern them. For

---

license).

341. Thomas J. McCarthy, *An Introduction: The Commercial Irrelevancy of the "Battle of the Forms"*, 49 BUS. LAW. 1019, 1022 (1994) (illustrating the function of U.C.C. gap fillers).

342. *See, e.g.*, Specht v. Netscape Commc'ns Corp., 306 F.3d 17, 29 n.13 (2d Cir. 2002) (noting "[i]t is not obvious, however, that U.C.C. Article 2 ('sales of goods') applies to the licensing of software," since such licenses may provide the right to use intangible "downloaded" programs); ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, 1450 (7th Cir. 1996) ("[W]e treat [ ] licenses as ordinary contracts accompanying the sale of products, and therefore as governed by the common law of contracts and the Uniform Commercial Code."); i.Lan Sys., Inc. v. Netscout Serv. Level Corp., 183 F. Supp. 2d 328, 332 (D. Mass. 2002) (noting that "[i]n Massachusetts and across most of the nation, software licenses exist in a legislative void," and concluding that "Article 2 [of the U.C.C.] technically does not . . . govern software licenses, but for the time being, the Court will assume that it does").

343. *See i.Lan*, 183 F. Supp. 2d at 332 (describing U.C.C. Article 2's provisions as "familiar").

344. *Id.* ("[O]nly Maryland and Virginia have adopted UCITA; Massachusetts has not. Accordingly, the Court will not spend its time considering UCITA.").

> the time being, Article 2's familiar provisions—the inspiration for UCITA—better fulfill those expectations rather than the common law. Article 2 technically does not and certainly will not in the future, govern software licenses, but for the time being, the Court will assume it does.[345]

Judge Guido Calabresi used a similar rationale for extending Article 2 to a software license in *Arbitron, Inc. v. Tralyn Broadcasting, Inc.*,[346] stating: "It is not clear whether, under New York law, a license agreement of the sort at issue in this case constitutes a contract for the sale of goods, or is otherwise governed by the U.C.C."[347] In *M.A. Mortenson Co. v. Timberline Software Corp.*,[348] the Washington Supreme Court noted that "[t]he parties agree in their briefing that Article 2 applies to the licensing of software" and agreed to extend the Code to a licensing transaction.[349]

UCITA and former Article 2B were attempted codification projects to give courts specialized software contracting law defaults. In 1999, in their joint press release about the UCITA,[350] both NCCUSL and ALI acknowledged the need for specialized legislation on computer contracts, underlying the risk of a lack of uniformity and clarity:

> The information industry has grown exponentially in the last decade and already exceeds most manufacturing sectors in size. The numbers of transactions in information and their dollar value are immense. The Internet and information technology and commerce are major components of the future economic

345. *Id.* at 332.

346. 400 F.3d 131 (2d Cir. 2005) (holding that an escalation clause authorizing licensor (Arbitron Inc.) to adjust its monthly licensing fee if licensee (Trayln Broadcasting) acquired additional radio stations was not unenforceably vague under New York law).

347. *Id.* at 138.

348. 998 P.2d 305 (Wash. 2000) (holding that provisions of a shrinkwrap licensing agreement between Mortenson and Timberline constituted an enforceable contract).

349. *Id.* at 578.

350. Press Release, NCCUSL & ALI, NCCUSL to Promulgate Freestanding Uniform Computer Information Transactions Act: ALI and NCCUSL Announce that Legal Rules for Computer Information Will Not Be Part of U.C.C. (Apr. 7, 1999) (on file with the Washington and Lee Law Review).

> prosperity of the United States. As the nation moves from an economy centered on transactions in goods and services to an information economy, the need has grown dramatically for coherent and predictable legal rules to support the contracts that underlie that economy. Lack of uniformity and lack of clarity of the legal rules governing these transactions engender uncertainty, unpredictability, and high transaction costs.[351]

D. Why U.C.C. Article 2 Does Not Fit Software Licensing

Article 2 applies to "transactions in goods."[352] Article 2 deals with the sale of goods, where sale is defined as "passing of title from the seller to the buyer for a price."[353] Therefore, a transaction needs to concern the sale of a good to be subject to Article 2. The scope of Article 2 contradicts with software licensing in two important ways. Firstly, due to its intangible characteristics, software is not a good.[354] Secondly, licensing does not constitute a sale, as the ownership and title do not change.[355] Hence, when a licensor and licensee enter into a license agreement, Article 2 of the U.C.C. technically does not apply. Chart Four depicts the growing number of anomalies in stretching U.C.C. Article 2 to software licensing.

CHART FOUR: U.C.C. ARTICLE 2 & THE LICENSING OF SOFTWARE[356]

Attribute	*Sales of Goods*	*Licensing of Software*
Sphere of Application	Tangible Goods	Intangible Assets
Transfer of Title	Title passes from the seller to the buyer for the	Title never passes from the licensor to the licensee.

351. *Id.*

352. U.C.C. § 2-102 (AM. LAW INST. & UNIF. LAW COMM'N 1977).

353. *Id.* § 2-106(1).

354. *See* discussion *infra* Part III.D.1.

355. *See* discussion *infra* Part III.D.2.

356. *See* Michael Rustad & Lori E. Eisenschmidt, *The Commercial Law of Internet Security*, 10 HIGH TECH. L.J. 213, 272 (1995) (diagramming licenses versus sales).

	contract price.[357]	
Ownership	Buyer owns what buyer purchases.[358]	Software licensee may own a physical or digital copy, but the ownership of the underlying intellectual property rights remains with the licensor.
Use Restriction After Contract Formation	Once title passes, typically no location or use restrictions exist in the sale of goods.	A license always imposes restrictions in the use of the software. Software licensors commonly restrict use of the software with clauses prohibiting commercial use, reverse engineering, or that preclude modifications. Licensors impose territorial restrictions and preclude distribution. Location and use restrictions are typically specified in the license

357. *See* U.C.C. § 2-301 (AM. LAW INST. & UNIF. LAW COMM'N 1977) ("The obligation of the seller is to transfer and deliver and that of the buyer is to accept and pay in accordance with the contract.").

358. *Id.*

		agreement.
Confidentiality	The sale of goods presumes no norm of confidentiality.	Licensors do not grant licensee a right to underlying data.
Delivery	The sale of goods is marked by a physical delivery of tangible goods. The buyer has the right to inspect goods.[359]	Software is typically delivered without any tangible media, because it is often "delivered" computer-to-computer without human contact.
Standard of Performance	Buyers of goods have a right to reject goods if the goods "fail in any respect to conform to the contract."[360]	Software is rarely, if ever, "bug-free." With the licensing of intangibles, substantial performance is the *de facto* performance standard.

As Chart Four demonstrates, U.C.C. Article 2 does not sufficiently address the intersection between intellectual property rights and contract law. As demonstrated in the next section, in the absence of a specialized software licensing law, applying Article 2 to software licensing is a legal fiction. The courts have been forced to construct a "white lie" to stretch sales law to the licensing of software because of a lack of specialized legislation.[361]

Courts applying Article 2 to software licensing brush over the obvious anomalies of applying a law intended for tangible goods to computer software licensing. The time has come for the courts to

359. U.C.C. § 2-512 (AM. LAW INST. & UNIF. LAW COMM'N 1977).

360. *Id.* § 2-601.

361. *See* LON L. FULLER, LEGAL FICTIONS 5 (1967) (quoting German jurist Rudolf von Jhering, who called legal fictions the "white lies" of the law).

"dispense with legal fictions, white lies and crutches"[362] when it comes to licensing.

The software industry evolved as America's third largest industry.[363] However, U.C.C. Article 2 has not kept pace with exigencies of information age contracts. The licensing of software and other information is greatly important as a means of transferring value in the information age economy, yet a growing number of commentators question the relevance of applying Article 2 laws to software licenses.[364] Anomalies reflect differences between the observed data and the theoretically expected data. Some incongruities result in contradictory or absurd results as the result of Article 2 being stretched to software licensing. The following sub-sections discuss in detail the subject-matter differences between Article 2 sales and software licensing.

1. Software Is Not a Good

For the past decade, courts have created a legal fiction through the claim that a software license is a sale of goods. In a 1988 opinion, a New York state court stated, "[i]t seems clear that computer software, generally, is considered by the courts to be a

---

362. *See* Rustad & Eisenschmidt, *supra* note 356, at 294 (censuring the legal fiction of software as a tangible good).

363. *See* Jon M. Garon, *Media & Monopoly in the Information Age: Slowing the Convergence at the Marketplace of Ideas*, 17 CARDOZO ARTS & ENT. L.J. 491, 574 (1999) (stating that by 1996 computer software was ranked as the "third largest segment of the U.S. economy"). The tech industry currently represents 9.2% of the national economy, and software occupations accounted for approximately one third of all new technology jobs between 2010 and 2017; *see also* COMPUTING TECH. INDUS. ASS'N, CYBERSTATES 2018, 7, 13 (2018), (analyzing the U.S. technology sector workforce).

364. *See, e.g.*, Towle, *supra* note 25, at 532 ("The value of Article 2 . . . is disintegrated when courts misuse it by applying it to information licenses."); Raymond T. Nimmer, *An Essay on Article 2's Irrelevance to Licensing Agreements*, 40 LOY. L.A. L. REV. 235 (2006) (positing that new forms of commercial transactions, like licenses, "receive little relevant guidance from the goods-centric themes of Article 2"); Maggs, *supra* note 7, at 620 (noting that "if the terms and conditions predominate over other aspects of" a software license, Article 2 should not govern, and suggesting Article 2's application to software sales "has ambiguous consequences at best").

tangible . . . item."[365] However, in the decades after the first publication of the U.C.C., and the earlier decisions stretching U.C.C. Article 2 to software licenses, it has been made clear that software is an intangible.[366] The term intangible "refers to, among other things, intellectual property rights and licenses of information."[367]

2. Title Passes with Sales but Not with a License

"In sales transactions, getting the goods is the essence of the deal. In information transactions, using the intangible is the *raison d'etre*; the physical container is an incidental."[368] One of the biggest irregularities of applying U.C.C. Article 2 to software licensing is that software is an intangible license rather than a tangible good being sold.[369] With the sale of goods, title passes from the seller to the buyer and the seller gives a warranty of good title.

In *Berthold Types Ltd. v. Adobe Sys., Inc.*,[370] the court declined to apply the U.C.C. to a software license, reasoning the transaction was only granting a license, stating that a "pure license agreement . . . does not involve transfer of title, and so is not a sale for Article 2 purposes."[371] The court in *Digital Ally, Inc. v. Z3*

---

365. Commc'ns Grps., Inc. v. Warner Commc'ns, Inc., 527 N.Y.S.2d 341, 344 (N.Y. Civ. Ct. 1988).

366. *See, e.g.*, Microstrategy, Inc. v. Netsolve, Inc., 368 F. Supp. 2d 533, 537 (E.D. Va. 2005) (acknowledging software as intangible property); *see also* Towle, *supra* note 25, at 534–35 (discussing courts' early misapplication of Article 2 to software and legislative efforts to clarify that software is not a good). *But see* discussion of cases *supra* note 338 (characterizing software as a good).

367. Towle, *supra* note 25, at 535. ("Intangibles . . . have always been expressly excluded from Article 2 as things in action.").

368. Lorin Brennan, *Why Article 2 Cannot Apply to Software Transactions,* 38 DUQ. L. REV. 459 (2000).

369. *See* Towle, *supra* note 25, at 532

> What's the dissonance between U.C.C. Article 2 and information licensing transactions? The answer is that information is not a good and is seldom sold. Some courts have been pretending otherwise, but modern digital information is no longer a minor part of the economy, and the unique contractual issues regarding digital information cannot be ignored by shoving it into U.C.C. Article 2.

370. 101 F. Supp. 2d 697 (N.D. Ill. 2000).

371. *Id.* at 698.

Technology, LLC[372] reviewed a license agreement "in which title does not pass from Z3 to Digital," and ruled that "[b]ecause title to the 'Licensed Materials' was not transferred, PLA-2009 is not governed by Article 2 of the Nebraska U.C.C."[373]

3. Licensing Imposes Restrictions on the Use of Software

Simply labeling an agreement a license does not make it one; rather the software maker must place meaningful restrictions on the licensee's use of the software after delivery. The "fundamental difference between a license and an assignment is, while licenses and assignments both focus on rights in, or use of information in, an assignment the original rights owners tends to divest itself of rights in the subject matter."[374] In contrast, in a license, the licensor "retains more rights in the subject matter of the license."[375]

Once title passes to the buyer, U.C.C. Article 2's provisions do not permit the seller to impose restrictions on the use of goods. The software publisher, however, still owns the software following the execution of a license agreement, and lets their customer use this software subject to terms and conditions.[376] As such, license

372. No. 09-2292-KGS, 2010 U.S. Dist. LEXIS 103715 (D. Kan. Sept. 30, 2010).

373. *Id.* at *9.

374. NIMMER, *supra* note 290, at 3.

375. *Id.*

376. *See* Jeff C. Dodd, *Time and Assent in the Formation of Information Contracts: The Mischief of Applying Article 2 to Information Contracts*, 36 HOUS. L. REV. 195, 210–11 (1999)

> For, in my experience, no other industry attempts to control the use of those who touch its products throughout the distribution chain, down to its ultimate consumers, with the same degree of tenacity and vigor as the software industry. In other contexts, the standard form serves primarily as a method to provide defenses. Thus, the standard forms employed by manufacturers of mass-marketed goods are fashioned more for the purposes of limiting liability for the unwise adventures of the users of its products than for regulating the use of its products. Indeed, a manufacturer of goods would not want to be viewed as exerting control over use down through the chain of distribution, for to do so presumably could make it even more responsible for what reckless consumers of its products may do.

agreements, including restrictive conditions prohibiting licensees from transferring or assigning the license to anyone else, will often give a specific expiration date for the license.[377]

As an example to how a sale and a license differs in terms of restriction on uses, a licensor could limit the application's use to Massachusetts users. In contrast, a car manufacturer cannot forbid a buyer from driving his vehicle within a single state. By its very nature, software licensing imposes restrictions on use after the application is delivered to the licensee.[378]

Software publishers routinely place restrictions (anti-assignment, anti-transfer, and non-commercial use clauses) to determine pricing on commercial use versus non-commercial use.[379] Many publishers condition the use of their product on a single-use basis while other publishers establish license on a fixed number of computers.[380] Some examples of restrictive terms include terms that intend to: preclude or permit commercial use, preclude making copies, permit making multiple copies, grant or limit access, allow use throughout a site, limit use to a specific computer, preclude distribution of copies for a fee, allow distribution of copies, preclude or allow modification, allow distribution only in specific way, or limit use to internal operations.[381]

If a licensee or customer installs software on more computers than specified in the agreement, the licensee or customer is in breach of the license agreement thereby infringing the publisher's copyright in the code.[382] U.C.C. Article 2 provides no legal

---

377. *See supra* Part III (defining software licenses and discussing the restrictions they place on software use).

378. *See supra* Part III (exploring these restrictions).

379. *See supra* note 309 and accompanying text (discussing this practice and citing cases that have developed the legal framework for how these restrictions operate).

380. *See* text accompanying note 311 (noting that a company's licensing fee might reflect the number of users).

381. *See* John A. Chanin, *The Uniform Computer Information Transactions Act: A Practitioner's View*, 18 J. MARSHALL J. COMPUTER & INFO. L. 279, 284 (1999).

382. *See* Vernor v. Autodesk, Inc., 621 F.3d 1102, 1104 (9th Cir. 2010) (examining the circumstances around licensee software use and copyright infringement); *supra* notes 293–295 and accompanying text (discussing the relationship between licenses and copyrights).

infrastructure to assist software publishers in imposing restrictions on its products after delivery to licensees.[383]

4. U.C.C. Article 2 Does Not Address Intellectual Property Rights in Licenses

Unlike the sales of goods, software licenses always include a close alignment with the underlying intellectual property rights protecting code.[384] Licenses seek to protect the rights of the developer on the underlying code. U.C.C. Article 2, however, addresses only the tangible good that is being sold, and provides no guidance as to the underlying intellectual property rights.[385]

5. Article 2's Perfect Tender Rule Does Not Fit Software Licensing

Article 2's perfect tender rule does not mesh well with software licensing because software is typically provided with "bugs" fixed in later releases of the same software.[386] Under Article 2's perfect tender rule, however, the buyer may reject goods if they fail in any respect.[387] The drafters of Article 2B argued:

> A minor defect in the transfer does not warrant rejection of performance or cancellation of a contract. Minor problems constitute a breach of contract, but the remedy is compensation for the value lost. This is especially true in reference to information contracts. Software often contains "bugs" or imperfections. Information services performance often entails small errors and incompleteness. The policy choice here adopts

383. *See* Towle, *supra* note 25, at 557 (analogizing the software licensing issue to agricultural sales and noting that "[t]he license of the patented and licensed corn seed is in a very different intellectual bin than the sale of the other seed. . . ."); *Id.* at 558 (looking at how transactions that "impose use and transfer restrictions" do not properly fit within the Article 2 framework).

384. *See id.* at 553 (presenting a hopeful picture for how states and courts will deal with Article 2 and intangible items and rights in the future).

385. *See supra* note 383 and accompanying text (exploring this dynamic).

386. *See* U.C.C. § 2-601 (AM. LAW INST. & UNIF. LAW COMM'N 2002) (detailing buyer's rights on improper delivery).

387. *See id.* (stating that, upon improper delivery, a buyer may reject the whole delivery, accept the whole delivery, or accept any commercial unit or units and reject the rest).

> general law and allows a party whose performance has minor errors to expect performance by the other party; subject, in appropriate cases, to offsets and compensation for the problems.[388]

Former Article 2B defined substantial performance to mean "performance of an obligation in a manner that does not constitute a material breach of contract."[389] Article 2B made note of the inapplicability of U.C.C. Article 2's perfect tender rule and proposed it with a substantial performance (or material breach) applicable to the tender of rights.[390]

E. Introduction to the New Article 2B of the U.C.C.

> To date, neither UCITA's nor the ALI's Principles have evolved as specialized sources of law for software contracting.[391] The ALI Reporters of the Principles contend no commercial law is in greater need of harmonization and clarification than software contracting law.[392] A new U.C.C. Article 2B is needed to provide the software industry with defaults for software licensing under the U.C.C.

1. New Article 2B Will Import Default Provisions from Prior Projects

More than twenty years have passed since the original Article 2B project was initiated.[393] Many of the provisions of the old U.C.C. Article 2B adapted Article 2 to the commercial realities of software and can be imported into the new Article 2B so long as defaults

---

388. U.C.C. § 2B-601 cmt.3 (discussing the general standard for material breach).

389. *See id.* § 2B-102(a)(36) (defining substantial performance).

390. *See* U.C.C. 2B Licenses § 2B-601 cmt.1 (AM. LAW INST. Tentative Draft 1998) (bringing together a number of general principles pertaining to performance of a contract).

391. *See supra* note 180 and accompanying text (acknowledging UCITA's failure to be adopted by the states); *supra* note 182 (acknowledging the Principles' failure to be adopted by state legislatures and state courts).

392. *See* Rustad & Onufrio, *supra* note 12, at 40.

393. *See* Raymond T. Nimmer et al., *License Contracts Under Article 2 of the Uniform Commercial Code: A Proposal,* 19 RUTGERS COMPUTER & TECH. L.J. 281, 283 (1993) (providing a contemporaneous report on the campaign to adopt Article 2B).

appropriately balance the rights and remedies of licensors and licensees.[394] New Article 2B will draw upon many of the advances in Article 2B, UCITA, and the Principles updated to address developments in software licensing and cloud computing agreements. The prior law reform projects sought to develop rules for electronic contracting as well as standards for access and Internet-related contracts.[395]

New Article 2B, for example, can import provisions from old Article 2B and the Principles of the Law of Software Contracts such as warranty provisions for software contracts.[396] Many provisions on electronic contracting, mass-market agreements, attribution, warranties, remedies, and other computer contracting terms can be drawn from prior Article 2B, UCITA, and the Principles.[397] The software warranties provisions of UCITA are an advance over Article 2B because the provisions in UCITA accommodate the exigencies of licensing.[398]

---

394. *See supra* Section I.C.1 (discussing the original Article 2B's history and foundational principles).

395. *See* Ritter, *supra* note 132, at 1827 (urging modernization of the U.C.C. in order to keep up with technology); Elvy, *infra* note 595, at 840 (noting that the Internet of Things will soon have profound effects on commercial and contract law).

396. *See infra* note 403 and accompanying text (surveying website warranties provisions and finding that the results are unfavorable to consumers).

397. Amelia H. Boss, *Taking UCITA on the Road: What Lessons Have We Learned?*, 7 ROGER WILLIAMS U. L. REV. 167, 168 (2001)

> If one views UCITA as standing for the proposition that a comprehensive and accessible body of law covering information contracts would add the predictability and certainty desired by those engaged extensively in electronic commerce, the answer is yes. And if one views UCITA as a "checklist" of issues that must be confronted in efforts to deal with new information-based transactions (whether those efforts are those of a practitioner in drafting a license or a legislator determining what issues to address next), the answer is again yes.

398. *See* UCITA, *supra* note 163, § 403 (providing that a licensor supply a product that is "fit for the ordinary purpose for which such computer programs are used").

2. Article 2B Must Be a Draft Reflecting Diverse Stakeholder's Interests

The most challenging task for the Reporter for the new Article 2B will be to provide contract law defaults that are fair to all stakeholders including consumers, the government, and other parties, who were not at the table during the drafting of Article 2B and UCITA.[399] Prior to devising Article 2B default terms, the newly appointed Article 2B Reporter will need to consult broadly with all stakeholders to best understand the diverse interests underlying many software contracting practices. Article 2B cannot be a "wish list" of desirable terms for the software industry, but must reflect the interests of all stakeholders.

The previous Article 2B project failed because they reflected the interest of software vendors rather than providing neutral defaults fair to the licensee community. The co-chairs of the ABA Software Licensing Committee acknowledged that the task for UCITA drafters was to create "gap fillers" conforming to industry practices,[400] while arguing the drafting "process is not intended to rewrite the law for commercial parties, the fundamental tenets of [freedom of contract that] have been in place since the creation of the U.C.C."[401]

A new Article 2B must have default rules that do not merely rubber-stamp widespread software industry practices; rather, new Article 2B default terms must fairly balance the rights of licensors and licensees.[402] Article 2B, for example, must not legitimate the widespread practice of disclaiming all warranties and limiting all

---

399. *See infra* note 404 (recalling the controversy that accompanied Article 2B and UCITA).

400. *See* Mary Jo Howard Dively & Donald A. Cohn, *Treatment of Consumers Under Proposed U.C.C. Article 2B Licenses*, 16 J. MARSHALL J. COMPUTER & INFO. L. 315, 317 (1997) (noting that privately negotiated terms will supersede the U.C.C.'s "gap fillers" terms).

401. *Id.*

402. *See supra* notes 32–33 and accompanying text (noting that jurisdictions were wary of adopting UCITA and other similar contracting defaults because they perceived these rules as being too friendly to the software industry); *see also supra* note 394 and accompanying text (urging that the new Article 2B emphasize rights and remedies).

remedies, leaving consumer licensees without a meaningful remedy.[403]

The new software-licensing article must update the law, while considering the interests of diverse stakeholders,[404] rather than forging a software contracting law representing Microsoft or Adobe's current contracting practices that make them unaccountable to users.[405] In short, the new Article 2B drafting process must be free of undue influence by the software industry.[406]

Revised Article 2B must avoid adopting controversial industry practices included in the original Article 2B project. These controversial industry practices include validating rolling

---

403. *See* Robert A. Hillman & Ibrahim Barakat, *Warranties and Disclaimers in the Electronic Age*, 11 YALE J. L. & TECH. 1, 3 (2009) (finding that fifty-three out of fifty-four leading website agreements disclaimed all warranties).

404. In 2000, opposition to the UCITA included diverse stakeholders who argued Article 2B was a wish-list for the software industry not reflective of the interests of other stakeholders, including: Federal Trade Commission senior staff, twenty six state attorneys general, the Consumer Federation of America, the Consumer Project on Technology, the U.S. Public Interest Research Group, the Association for Computing Machinery, the Institute for Electrical and Electronic Engineers, the Newspaper Association of America, five major library associations, and the entertainment industry. Frum, *supra* note 30. *See also* Mark K. Anderson, *Now, UCITA . . . Later, You Don't,* WN (Mar. 7, 2000, 8:00 AM), https://article.wn.com/view/2000/03/07/Now_UCITA_Later_you_dont/ (last visited Apr. 3, 2019) (reporting on the adoption of UCITA in Virginia and noting the criticism surrounding the Act) (on file with the Washington and Lee Law Review).

405. "Throughout the drafting process, UCITA and its predecessor U.C.C. 2B (Uniform Commercial Code 2B)—the original effort to develop a new uniform legal framework in computer information transactions—were highly controversial to many diverse groups. . . . Furthermore, the attorneys general of twenty-four states signed joint letters raising serious substantive concerns with the potential adverse impact of UCITA on users of software and other information products. Similarly, the Federal Trade Commission filed comments critical of the proposal." *See* ARL, UCITA: SUMMARY AND IMPLICATIONS FOR LIBRARIES AND HIGHER EDUCATION 1 (1999), https://www.cni.org/wp-content/uploads/2013/06/UCITA-RJPetersen2000Ftf.pdf.

406. Frum, *supra* note 30

> Many feel that despite the good intentions behind the UCITA, the software industry's strong effect on the drafting process has spoiled the initial attempt to provide fairness to all parties involved in the licensing of software and digital information (software industry representatives sat in on open drafting sessions of the act, but no consumer group representatives were present).

contracts characterized as having new terms only revealed in the post-payment period, giving licensors the right to unilaterally modify terms after an agreement is in effect.[407]

The new Article 2B Reporter will need to take a stand against the enforceability of agreements, such as browsewrap agreements, that do not require the user to manifest assent, but premise contract formation on merely using software or a website. U.S. courts are much less likely to enforce browsewrap because there is no evidence that a user even noticed the terms, let alone assented to them.[408]

3. New Article 2B Needs Licensee Remedies for Defective Code

Revised Article 2B will only be widely adopted by state legislatures if at minimum the proposed article affords adequate licensee's remedies for defective software. Both UCITA and the predecessor Article 2B enabled software producers to disclaim all warranties and limit remedies.[409] In the event of breach, the proposed Article 2B will not allow for the enforcement of license agreements disclaiming all remedies.

---

407. *See* U.C.C. 2B Licenses §2B-207 cmt.5 (AM. LAW INST. 1998) (Tentative Draft) (endorsing rolling contracts).

408. *See, e.g.*, Nicosia v. Amazon.com, Inc., 834 F.3d 220, 228–34 (2d Cir. 2016) (finding that the district court erred in dismissing the plaintiff's claim because it was plausible that the plaintiff was not given notice of Amazon's mandatory arbitration provision); Nguyn v. Barnes & Noble Inc., 763 F.3d 1171, 1176–80 (9th Cir. 2014) (affirming the district court's denial of the defendant's motion to compel arbitration because the defendant's Terms of Use did not require the user to manifest assent); *See* Woodrow Hartzog, *Website Design as Contract*, 60 AM. U. L. REV. 1635, 1642 (2011) (arguing that courts need to rethink what constitutes an online agreement).

409. *See Uniform Computer Information Transactions Act ("UCITA") Approved by National Conference of Commissioners on Uniform State Laws,* REEDSMITH (Sept. 2, 1999), https://www.reedsmith.com/en/perspectives/1999/09/uniform-computer-information-transactions-act-ucit (last visited Apr. 3, 2019) ("UCITA adds new safe harbor language to existing UCC 'magic word' disclaimers. Further, implied warranties can be waived by a refusal to examine the subject matter of the contract, including computer software.") (on file with the Washington and Lee Law Review).

4. New Article 2B Will Prohibit Electronic Self-Help

Early drafts of former Article 2B and UCITA included electronic self-help, allowing licensors "to electronically disable, remove, or prevent the usage of computer information or software through 'back doors' in the software that provide access to hidden commands that may be activated to disable it."[410] Section 816 of the 2002 draft of UCITA prohibits electronic self-help,[411] and so will revised Article 2B.

5. New Article 2B Will Not Adopt Mass-Market Licenses

Former Article 2B and UCITA invented the concept of the mass-market license agreement to refer to all non-negotiated license agreements (clickwrap and shrinkwrap agreements) entered into by business licensees. UCITA's proposed mass-market contracts were a legitimated contracting regime, divesting consumers of rights to a minimum remedy.[412] One author argued both UCITA and old Article 2B would have had a better reception if the draft had protected consumers rather than validating one-sided mass-market licenses:

> UCITA would be forward-looking if software vendors were held to a minimum standard that required their software to conform to its documentation. The inclusion of this mandatory term would bring greater balance to consumer transactions, which are entirely adhesive. Consumers would be entitled to a full

410. ARL, *supra* note 405, at 2.

411. *See* UCITA, *supra* note 163, §816 ("In this section, 'electronic-self-help' means the electronic exercise without court order of a licensor's rights in the event of cancellation of a license because of a the licensee's breach of contract, but does not include actions expressly permitted under Sections 814 and 815(b).").

412. Rustad, *supra* note 134, at 547

> Pro-regulatory opponents of UCITA, such as the Consumer Project on Technology and others, regularly attended Article 2B and UCITA meetings. They point out that mass-market licenses are adhesive contracts that offer no possibility of negotiation. The freedom of contract is a legal fiction in "take it or leave it" mass-market licenses. . . . It is in the self-interest of the software industry to disclaim all warranties and consequential damages, which may leave consumers without a minimum adequate remedy.

> refund as well as reasonable incidental damages, which is a mandatory minimum remedy. The software industry generally advocates a law of licensing that permits the vendor to contractually limit the end user's remedies to repair, replacement or refund. Under my proposal, vendors could not disclaim the implied warranty of merchantability. If software did not substantially conform to its documentation, the consumer would be guaranteed a refund and reimbursement of reasonable incidental damages.[413]

These mass-market licenses will not be followed in new Article 2B. At a minimum, when software substantially fails to conform to its documentation, new Article 2B will give consumer licensees the right to the minimum remedy of the right to a refund plus incidental damages. The concept of a minimum adequate remedy will be extended to consumer licensees to protect their reasonable expectations, whether a limited remedy is exclusive or not.[414]

6. Duty to Disclose Known Risks

UCITA gave software licensors the right to "waive liability for known defects in their software that they failed to disclose to their customers. This discourages software firms from exercising quality control, and could leave institutions without legal recourse for the damage caused by these known defects."[415]

The Principles' warranty provision, on the other hand, states that software companies must disclose known defects in the products they are selling.[416] New Article 2B will also adopt a

---

413. *Id.* at 550–51.

414. *Id.* at 552–53

> Other critics argued just the opposite, that Article 2B was a statute by and for the software industry against consumers. Consumer representatives argued that Article 2B was anti-consumer and that they were not included in the drafting process. Ralph Nader's Consumer Project on Technology also calls for the defeat of UCITA because of its pro-industry bias. The Federal Trade Commission (FTC) questions whether it is appropriate for UCITA to depart from well-established consumer protection and competition policy principles in a state commercial law statute. The FTC believes that UCITA needs to be modified to protect consumers.

415. ARL, *supra* note 405, at 2.

416. *See* PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS, *supra* note 35, §3.05 (discussing other implied quality warranties).

non-disclaimable duty on software vendors for providing licensees with disclosures about known defects in their application, documentation, and other products.

F. Our Proposal for a New Article 2B of the U.C.C.

The courts' stretching of U.C.C. Article 2 to software licensing is a conceptual muddle.[417] Increasingly, courts and commentators are commenting on the lack of cohesion between Article 2 sales and the licensing of software.[418] Therefore, we propose the adoption of a new U.C.C. Article 2B. The foregoing are just a few of the reforms Article 2B will adapt in order to avoid the pro-licensor bias that prevented states from adopting UCITA and its predecessor, former Article 2B.

At a minimum, our proposed Article 2B will address the rules for the following issues: (1) parties' choice of law; (2) rules for term and termination and whether automatic renewal should be allowed; (3) whether vendors or users should have a right to cure a breach; (4) ability of the provider to cap damages and whether exceptions should be carved out for breaches of confidentiality, data protection, and intellectual property rights; and (5) indemnification for intellectual property infringements. Chart Five presents the parts of proposed Article 2B.

CHART FIVE: ARTICLE 2B ADDRESSING LICENSES

Parts of U.C.C. 2B	*Purpose of Provision*

417. *See supra* Part I.A.2 (showing the legal development of Article 2 and arguing that it has been stretched to its conceptual and technological limits in some cases).

418. *See, e.g.*, Towle, *supra* note 25, at 532 (arguing that the core purpose of Article 2, the sale of goods, cannot be applied to software and other modern information technology).

Part I: General Provisions	2B-101 (Short Title); 2B-102 (Definitions); 2B-103 (Scope); 2C-104 (Choice of Law); 2C-105 (Choice of Forum)
Part II: Formation	2B-201 (Formal Requirements); 2B-202 (Offer and Acceptance); 2B-203 (Electronic Transactions and Messages); 2B-204 (Parol Evidence Rule); 2B-205 (Modifying a Licensing Agreement); 2B-206 (Unconscionable Contract or Term)
Part III: Warranties	2B-301 (Warranty of Authority); 2B-302 (Warranty of Noninfringement); 2B-303 (Express Warranties); 2B-304 (Implied Quality of Service Warranties); 2B-305 (Fitness for a Particular Purpose); 2B-306 (Disclaimers and Modifications of Service Warranties)
Part IV: Performance	2B-401 (Breach of Contract); 2B-402 (Standard for Performance); 2B-403 (Rejection); 2B-404 (Provider's Right to Cure); 2B-405 (Customer's Right of Revocation)
Part V: Term & Termination	2B-501 (Defining Terms); 2B-502 (Notice of Termination); 2B-503 (Survival of Obligations)
Part VI: Remedies	2B-601 (Overview of Customer's Remedies); 2B-602 (Overview of Provider's Remedies); 2B-603 (Damages); 2B-604 (Performance Remedies)

V. New U.C.C. Article 2C for Cloud Computing

A. Article 2C for SaaS Contracts

The term "cloud" describes how users can remotely access software applications, tools, and data from the Internet.[419] At present, there is no U.C.C. Article or any statute addressing master service agreements (MSAs), and service level agreements (SLAs) in relation to cloud services, which are contracts that govern terms such as the privacy of the user, responsiveness, resource efficiency, metrics for measuring usage, interoperability and remedies in the event of a service interruption.[420] SLAs clarify response and resolution in the event that service is interrupted or data is lost.[421] SLAs are drafted with terms skewed in favor of the cloud provider reallocating the risk of service interruption, service breaches, and other lapses to customers. Customers express dissatisfaction with the security provisions of SLAs.[422]

It is a propitious moment to create an Article 2C, addressing the growing SaaS industry. At minimum, new Article 2C must provide sensible defaults for choice of law, choice of forum, performance standards, security provisions, and the unique issues of access contracts in the multi-tenant cloud computing setting. New Article 2C must balance responsibilities of the cloud provider and customer. The new U.C.C. Article should stipulate that the

---

419. *See What is Cloud Computing?*, MICROSOFT AZURE, https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/ (last visited Apr. 3, 2019) (providing a basic overview of terms, uses, and benefits associated with cloud computing) (on file with the Washington and Lee Law Review).

420. *See generally* EUR. ECON. & SOC. COMMITTEE, CLOUD SERVICE LEVEL AGREEMENT STANDARDISATION (2014), old.eesc.europa.eu/resources/docs/new-2014-11-13_csig-slastandardisationguidelines.pdf (seeking to develop principles, vocabulary, and objectives for cloud SLAs).

421. *See Service Level Agreement (SLA)*, TECHOPEDIA, https://www.techopedia.com/definition/24420/service-level-agreement-sla (last visited Apr. 3, 2019) (outlining the basic functions of SLAs) (on file with the Washington and Lee Law Review).

422. *See* Warwick Ashford, *Cloud Contracts Poor on Security, Says Gartner*, COMPUTER WEEKLY (Aug. 1, 2013, 10:02 AM), https://www.computerweekly.com/news/2240202904/Cloud-contracts-poor-on-security-says-Gartner (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

provider has a non-disclaimable duty to ensure adequate disaster protection and business continuity assurance.

Cloud computing contracting law should require a provider to demonstrate redundancy which means that the provider has duplicates or backups of various data, equipment, systems, and applications should the cloud fail. The new cloud computing law should spell out the provider's duty for maintenance and disclose where data is located or stored so that customers can better protect their data, which are often the crown jewels of a company.

U.C.C. Article 2 has been stretched to the limits in addressing software licenses, and it is even less relevant for SaaS.[423] The seventy-year-old U.C.C. Article 2 offers no guidance on computer contract law defects or new developments with artificial intelligence, blockchain technology, the Internet of Things, and the rapid evolution of SaaS.[424] Our proposal for an Article 2C recognizes developing default rules for SaaS will be even more daunting than for Article 2B, because there are no prior codification projects to draw from, no specific "cloud statutes" address contract law defaults for SaaS, and the case law is undeveloped.[425] As of March 21, 2019, a search of Westlaw's

---

423. The services themselves have long been referred to as Software as a Service (SaaS). The datacenter hardware and software makes up a Cloud. When a Cloud is made available in a pay-as-you-go manner to the general public, we call it a Public Cloud; the service being sold is Utility Computing. We use the term Private Cloud to refer to internal datacenters of a business or other organization, not made available to the general public. Thus, Cloud Computing is the sum of SaaS and Utility Computing, but does not include Private Clouds. People can be users or providers of SaaS, or users or providers of Utility Computing. MICHAEL ARMBRUST ET. AL., ABOVE THE CLOUDS: A BERKELEY VIEW OF CLOUD COMPUTING 1 (Feb. 1, 2009), https://www2.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.pdf.

424. *Cf.* Amelia H. Boss et al., *Scope of the Uniform Commercial Code: Advances in Technology and Survey of Computer Contracting Cases,* 44 BUS. LAW. 1671, 1672–75 (1988–1989) (addressing earlier versions of these technological questions).

425. *See* CLOUD COMPUTING CONTRACTS 101: SEVEN KEY CLAUSES & SEVEN COMMON MISTAKES, AM. BAR. ASS'N (2016), https://www.americanbar.org/content/dam/aba/multimedia/cle/materials/2016/06/ce1606ccc.pdf (counseling lawyers on how to draft effective cloud computing contracts but failing to mention any applicable codes or statutes); *cf.* MARK H. WITTOW, CLOUD COMPUTING: RECENT CASES AND ANTICIPATING NEW TYPES OF CLAIMS (2011), www.klgates.com/files/Publication/5d61b5e9-ad6f-4d6a-985c-30cb6b84dae2/Presentation/PublicationAttachment/42137be3-c03c-4c58-a527-31d872b78ec5/Wittow_CloudComputing_Jan2011.pdf (noting that cloud

database of state and federal courts reveals while 229 courts either have mentioned the term SaaS or cloud computing,[426] no opinion has addressed what contract law remedies are available to SaaS and cloud computing.

The proposed Article 2C to the U.C.C. will provide necessary guidance in resolving key issues concerning SaaS agreements. New Article 2C will bring software services into the U.C.C. and serve as a practical computer contracting roadmap for a rapidly evolving industry. The Article 2C Reporter will need to consult with diverse stakeholders to forge defaults for deployment models consistent with best practices and industry standards.[427]

Cloud computing "refers to both the applications delivered as services over the Internet and the hardware and systems software in the datacenters that provide those services."[428] Gartner defines cloud computing as "a style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service using Internet technologies."[429] SaaS allows the user "to access software and other fundamental computing resources located on remote computer networks operated by third parties."[430] "*Elasticity, pay-per-use, low time to market,* and *transfer* are some of the enabling features that make cloud computing a ubiquitous paradigm. . . . The concept of a multitenant database has been predominantly used in the context of Software as a Service (SaaS)."[431] SaaS offers "massively scalable IT-enabled capabilities

---

computing will generate a variety of commercial disputes focused on contract law) (on file with the Washington and Lee Law Review).

426. Cloud computing disputes are becoming more common. *See, e.g.*, RealPage, Inc. v. Yardi Systems, Inc., 2011 WL 3565112, *1 (C.D. Cal. 2011) (noting that "SaaS allows RealPage clients to aggregate applications from multiple software providers into a single system, which is stored on RealPage's servers and can be remotely accessed by the client via the Internet").

427. *See Commission Report on Cloud Computing Contracts*, *supra* note 20, at 6 ("[I]t should be noted that, as the cloud market is a relatively new one, there are no set standards yet of what could be considered best market practices.").

428. *Id.* at 1.

429. *Cloud Computing,* GARTNER IT GLOSSARY, https://www.gartner.com/it-glossary/cloud-computing/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

430. Orly Mazur, *Taxing the Cloud*, 103 CAL. L. REV. 1, 3 (2015).

431. Aaron Elmore et. al., *Who's Driving This Cloud? Towards Efficient*

delivered 'as a service' to external customers using Internet technologies."[432]

In the past decade, cloud computing has evolved alongside licensing as the leading computer contracting form.[433] In the past five years, the move toward SaaS is growing exponentially because of its economy of scale, geographic distribution, and lower costs.[434] "Transactions involving hosted software, such as SaaS, do not include a transfer of a computer program, and, accordingly, the software regulations should not govern the characterization of such transactions."[435]

Cloud computing is an alternative delivery system based on either a "hosted application model or a software-on-demand model,"[436] as opposed to the systems of sales, leases, and licenses. Title never passes in SaaS because cloud computing is essentially an access contract increasingly provided through mobile devices.[437]

Cloud computing is "one of the most significant technical advances for global business in this decade—as important as PCs were to the 1970s."[438] "Cloud Computing is likely to have the same

---

Migration for Elastic and Autonomic Multitenant Databases, UCSB COMP. SCI. TECH. REP. 1 (2010) (arguing for autonomic and scalable multitenant database management systems).

432. Jon Brodkin, *Gartner: Seven Cloud-Computing Risks*, NETWORK WORLD (July 2, 2008, 1:00 AM), https://www.networkworld.com/article/2281535/data-center/gartner--seven-cloud-computing-security-risks.html (last visited Apr. 3, 2019) (reviewing Gartner Report on risks of cloud computing) (on file with the Washington and Lee Law Review).

433. *See* Donna Ray Berkelhammer, *A Cloud of Suspicion: Legal Issues Surrounding Cloud Computing*, LEXISNEXIS (May 14, 2013), https://www.lexisnexis.com/legalnewsroom/top-emerging-trends/b/emerging-trends-law-blog/posts/sands-anderson-pc-a-cloud-of-suspicion-legal-issues-surrounding-cloud-computing (last visited Apr. 3, 2019) (noting the increase in SaaS or cloud-based software services contracts) (on file with the Washington and Lee Law Review).

434. *See* Brodkin, *supra* note 432 (giving a brief overview of the rise in cloud computing).

435. Erik Christenson et al., *An Introduction to the Complexities of Taxing Cross-Border Transfers of Digital Goods and Services*, FLA. B.J. 1 (2018).

436. H. WARD CLASSEN, A PRACTICAL GUIDE TO SOFTWARE LICENSING FOR LICENSEES AND LICENSORS 211 (4th ed. 2011).

437. *See* Lystra, *infra* note 527 (noting that SaaS mobile apps "live in the cloud instead of on your hard drive").

438. Nancy J. King & V.T. Raja, *What Do They Really Know About Me in the Cloud?: A Comparative Law Perspective on Protecting Privacy and Security of*

impact on software that foundries have had on the hardware industry."[439] "The enterprise SaaS market is now generating $20B in quarterly revenues for software vendors, a number that is growing by 32% per year."[440] In 2018, Amazon's first quarter revenues grew 49% to $5.44 billion.[441] "Worldwide public cloud services market is projected to grow 21.4% in 2018 to total $186.4 billion, up from $153.5 billion in 2017."[442] Despite the economic importance of cloud computing, the industry does not have an agreed upon definition of contractual defaults.[443]

Cloud providers such as Google, Microsoft, Amazon Web Services (AWS), and Oracle have no recourse but to draft their subscription service agreements in a legislative and judicial void.[444] Cloud computing introduces many challenges, such as when Amazon's Cloud Compute (EC2) services went dark for a few days in 2011.[445]

Sensitive Consumer Data, 50 AM. BUS. L.J. 413, 418 (2013).

439. ARMBRUST ET AL., *supra* note 423, at 2–3.

440. Louis Columbus, *Roundup Of Cloud Computing Forecasts And Market Estimates, 2018,* FORBES (Sept. 23, 2018), https://www.forbes.com/sites/louiscolumbus/2018/09/23/roundup-of-cloud-computing-forecasts-and-market-estimates-2018/#1f0cea84507b.

441. *See* Bob Evans, *Microsoft Tops Amazon in Q1 Cloud Revenue, $6.0 Billion To $5.44 Billion; IBM Third at $4.2 Billion*, FORBES (Apr. 27, 2018, 7:45 AM), https://www.forbes.com/sites/bobevans1/2018/04/27/microsoft-tops-amazon-in-q1-cloud-revenue-6-0-billion-to-5-44-billion-ibm-third-at-4-2-billion/#4b082225d4b6 (last visited Apr. 3, 2019) (comparing quarterly revenue statistics for leading enterprise-cloud providers) (on file with the Washington and Lee Law Review).

442. Nick Ismail, *Worldwide Public Cloud Revenue to Grow 21.4% in 2018*, INFO. AGE (Apr. 12, 2018), https://www.information-age.com/worldwide-public-cloud-revenue-123471444/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

443. William Jeremy Robison, Note, *Free at What Cost? Cloud Computing Privacy Under the Stored Communications Act*, 98 GEO. L.J. 1195, 1200 (2010) ("In the midst of this competitive chaos, participants are organizing into opposing factions to promote different standards and operating principles to guide the development of cloud computing. The industry cannot even agree on the meaning of the term "cloud computing.").

444. *See* Brodkin, *supra* note 432 (overviewing the risks of cloud computing and listing Amazon's EC2 and Google App Engine as examples of cloud computing).

445. *See* Peter Bright, *Amazon's Lengthy Cloud Outage Shows the Danger of*

However, at present, no federal or state statute addresses what remedies are available if a customer loses access to their data and what remedies are available to both the customer and their data when a cloud provider closes their operation.[446]

In the absence of specialized contract defaults, cloud contracts will be subject to general contract law.[447] The most recent contracting practice, accessing services using mobile devices through cloud computing, creates new legal dilemmas when stretching U.C.C. Article 2 to apply its default rules for cloud services.[448] As software contracting practices evolve further, however, it is important for the U.C.C. to accommodate these evolutions in software and keep pace. Karl Llewellyn, the drafter of U.C.C. Article 2, wrote, "[t]oday's policy and principles will be outdated, doubtless, within a generation. But guidance it gives when, and as long as, it fits the facts. And surely the lesson remains that policy and principle just fit the facts, and must be rebuilt to fix the changing facts."[449]

Complexity, ARS TECHNICA (Apr. 30, 2011, 6:12 AM), https://arstechnica.com/information-technology/2011/04/amazons-lengthy-cloud-outage-shows-the-danger-of-complexity/ (last visited Apr. 3, 2019) (reporting on the circumstances and consequences of the outage) (on file with the Washington and Lee Law Review).

446. *See* Andrew Mirsky, *Liability for Data Loss in the Cloud: Why No One Accepts Liability? Why Carve It Out?*, MEDIA TECH L. (Mar. 21, 2013), http://mediatechlaw.mstreetlegal.com/2013/03/21/liability-for-data-loss-in-the-cloud-why-noone-accepts-liability-why-carve-it-out/ (last visited Apr. 3, 2019) (discussing why and how hosting providers attempt to absolve the host of responsibility if data loss occurs) (on file with the Washington and Lee Law Review).

447. *See* Scott Nonaka & Kevin Rubino, *Contracting in the Cloud: Who Pays for a Data Breach?*, BLOOMBERG (Oct. 5, 2016), https://www.bna.com/contracting-cloud-pays-n57982078065/ (last visited Apr. 3, 2019) (noting that the standard term "consequential damages" is "by no means clear, let alone in the context of a cloud services contract") (on file with the Washington and Lee Law Review).

448. *See supra* note 20 (discussing why cloud agreements should not fall under the umbrella of regulations that govern the sale of goods).

449. Karl Llewellyn, *On Warranty of Quality and Society: II*, 37 COLUM. L. REV. 341, 409 (1937).

B. The Concepts and Methods of Cloud Computing

Cloud computing refers to the specific Internet-accessible service, providing use of software applications, hosted by a service provider made available to the customer over a network on a term-use basis.[450] SaaS delivers files through a hosted web portal allowing customers the ability to not invest in file transfer infrastructure.[451] Users access software over the Internet using a standard web browser.[452]

Cloud computing is "an emerging form of computing where users have access to scalable, on-demand capabilities that are provided through Internet-based technologies, [with] the potential to provide information technology services more quickly and at a lower cost."[453] Cloud computing signifies "on-demand delivery of IT

---

450. Anne Hulecki & Michael L. Rustad, *Understanding Cloud Contracting Practices*, *in* SOFTWARE LICENSING, CLOUD COMPUTING AGREEMENTS, OPEN SOURCE, AND INTERNET TERMS OF USE: A PRACTICAL APPROACH TO INFORMATION AGE CONTRACTS IN A GLOBAL SETTING §8.01, 843–44 (2016-2017 ed.)

> Cloud services have evolved into different service models. Infrastructure as a Service (IaaS) may include equipment for physical storage, servers, networking capabilities, and virtualization. "Virtualization" in this context means using software to allow a piece of hardware to run multiple operating system images at the same time. (footnote omitted) An example of IaaS is Amazon Web Services. With IaaS, typically, the customer provides and maintains its own software applications, data, middleware, and Operating Systems. PaaS refers to a 'cloud platform,' which may offer all the elements of IaaS, plus middleware, and an operating system. In other words, PaaS is an environment used by developers to create and host web applications and data, for example, Google App Engine, which provides users with applications from the "cloud," or remote storage. Other end-user examples of PaaS include Google Docs, Google Spreadsheets, and the Chrome OS. The most complete service offerings are SaaS, which typically include all the elements of IaaS and PaaS, as well as the software applications and hosting of data input by the client.

451. *See What Is Cloud Computing?*, MICROSOFT AZURE, https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/ (last visited Apr. 3, 2019) (explaining that with SaaS, "cloud providers host and manage the software application and underlying infrastructure") (on file with the Washington and Lee Law Review).

452. *See id.* (noting that SaaS users connect to the applications over the Internet).

453. Google, Inc. v. United States, 95 Fed. Cl. 661, n.6 (Fed. Cl. 2011).

resources via the Internet with pay-as-you-go pricing."[454] Cloud computing enables both on-demand, measured self-service, being made accessible to consumers on devices through the Internet from third-party providers such as Google, Microsoft, Amazon Web Services (AWS), and Oracle.[455]

Cloud computing services share five characteristics: (1) on-demand self-service, (2) broad network access, (3) resource pooling, (4) rapid elasticity or expansion, and (5) measured service.[456] Cloud computing is provided through a number of service models, including SaaS, PaaS, and IaaS.[457] The National Institute of Standards and Technology (NIST) defines "SaaS" as Software as a Service, while "PaaS" means Platform as a Server and "IaaS" means Infrastructure as a Service.[458] This list of services is not exhaustive. For example, XaaS is a hybrid combine that blends SaaS, IAAS, and PaaS.[459] These users access Google

---

454. *What Is Cloud Computing?,* AMAZON WEB SERV., http://aws.amazon.com/what-is-cloud-computing/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

455. *See* Larry Dignan, *Top Cloud Providers 2018: How AWS, Microsoft, Google, IBM, Oracle, Alibaba Stack Up,* ZD NET (Dec. 11, 2018, 12:48 AM), https://www.zdnet.com/article/top-cloud-providers-2018-how-aws-microsoft-google-ibm-oracle-alibaba-stack-up/ (last visited Apr. 3, 2019) (comparing some of the most popular cloud providers) (on file with the Washington and Lee Law Review).

456. CISCO, CISCO GLOBAL CLOUD INDEX: FORECAST AND METHODOLOGY, 2016–2021 WHITE PAPER 6 (Feb. 1, 2018), https://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/white-paper-c11-738085.html (last visited Apr. 3, 2019)

> Cloud data centers have five essential characteristics of cloud computing as listed by National Institute of Technology (NIST). These five characteristics are on-demand self-service, broad network access, resource pooling, rapid elasticity or expansion, and measured service. For more details, refer to Appendix E. Cloud adoption enables faster delivery of services and data, increased application performance, and improved operational efficiencies.

(on file with the Washington and Lee Law Review).

457. *See* Javier Barabas, *An IBM Perspective: IaaS vs. PaaS vs. SaaS,* IBM, https://www.ibm.com/cloud/learn/iaas-paas-saas (last visited Apr. 3, 2019) (offering a brief overview of each of these service models) (on file with the Washington and Lee Law Review).

458. *See* PETER MELL & TIMOTHY GRANCE, THE NIST DEFINITION OF CLOUD COMPUTING 2–3 (2011), https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf (discussing the basics of the cloud computing model and providing definitions).

459. *See Anything as a Service (XaaS),* TECHOPEDIA,

Docs in a cloud platform whether combined in a XaaS paradigm or as an individual user.

Distinctions between various cloud services are important because "PaaS sales and services are not taxable as long as there is no transfer of tangible personal property."[460] Similarly, "IaaS sales and services are not taxable."[461] These IaaS sales include separately stated charges for "servicing or repairing software or hardware."[462]

Cloud computing enables "convenient, on-demand network access" precisely because it allows shared resources to be "rapidly provisioned and released with minimal management effort or service provider interaction."[463] This resiliency and flexibility offers readily apparent advantages over traditional computing models for both producers and consumers. Redundancy gives the provider duplicate copies of various data, equipment, and systems to be used in the event part of the cloud fails or becomes inaccessible.[464] As a result of its apparent advantages, SaaS is "presently growing 6.5 times as fast as the world economy."[465]

The ALI and NCCUSL should initiate a project to create a new U.C.C. article addressing cloud computing because soon SaaS will eclipse licensing, leases, and sales. We acknowledge it is not

---

https://www.techopedia.com/definition/14027/anything-as-a-service-xaas (last visited Apr. 3, 2019) (discussing the basics of XaaS and providing a general definition) (on file with the Washington and Lee Law Review).

460. Premier Netcomm Solutions, LLC v. Dir., Div. of Taxation, 2016 N.J. Tax Unpub. LEXIS 50 (Tax Ct. of N.J. Oct. 25, 2016).

461. *Id.*

462. *Id.*

463. MELL & GRANCE, *supra* note 458, at 2.

464. *See* Kris Beevers, *Resiliency in the Age of Cloud Services*, NETWORK WORLD (Nov. 27, 2017), https://www.networkworld.com/article/3238509/resiliency-in-the-age-of-cloud-services.html (last visited Apr. 3, 2019) (listing SaaS as an example of "a new shift in the way resilient applications are built") (on file with the Washington and Lee Law Review).

465. Chris Robertson, *Cardin Partners Announces Q2 2017 Update to Global Saas10k List and Top 5 Sectors of Enterprise SaaS*, CARDIN PARTNERS (July 28, 2017), https://cardinpartners.com/news/2017/7/28/cardin-partners-announces-q2-2017-update-to-saas10k-list-and-top-5-sectors-of-enterprise-saas-7l9h4 (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

possible to restate cloud computing contracting law, because any attempt to do so would be premature. However, Article 2C defaults will provide a baseline for courts and lawyers negotiating service level agreements.

In addition, new issues arise out of the multi-tenant model with many companies accessing the same data storage and software applications. Courts are just beginning to address SaaS contractual disputes as seen in *Mahlum v. Adobe Systems, Inc.*[466] Codifying best industry practices into the commercial law is particularly difficult when both trade usages and cloud computing are still rapidly evolving.[467] With cloud computing being less than two decades old, the new U.C.C. 2C must be a semi-permanent piece of legislation amended continuously to take into account the continued expansion of cloud computing contracting law.

Cloud computing is the next great technological revolution predicated upon a services paradigm.[468] "The nature of cloud-based computing is such that servers are not necessarily in the same physical location as the company."[469] Cloud computing services are diverse service contracts ranging from "'public cloud' services . . . pre-packaged standard services—to 'private cloud' services . . . highly individualized services designed specifically for a single client."[470] The U.C.C. Reporter will likely define and operationalize SaaS deployment models such as (1) the Public Cloud, (2) Private Cloud, (3) Community Cloud, and (4) Hybrid Cloud.

The "public cloud" is defined as offering software services for public use.[471] Amazon Elastic Compute Cloud, EC2, Evernote,

---

466. No. 14-CV-02988-LHK, 2015 U.S. Dist. LEXIS 2085 (N.D. Cal. Jan. 8, 2015).

467. *See* Dignan, *supra* note 455 (discussing recent developments in various cloud computing platforms).

468. *See* Derek Constantine, Note, *Cloud Computing: The Next Great Technological Innovation, the Death of Online Privacy, or Both*, 28 GA. ST. U. L. REV. 499, 499–500 (2012) (noting that, despite concerns, consumers and businesses are still embracing cloud computing).

469. NTE LLC v. Kenny Constr. Co., 2015 U.S. Dist. LEXIS 142686, at *12 (N.D. Ill. Oct. 21, 2015).

470. IBM Corp. v. Visentin, 2011 U.S. Dist. LEXIS 15342, at *15–16 (S.D.N.Y. Feb. 16, 2011).

471. *See supra* note 423 (discussing the core characteristics of the public cloud).

IBM's Blue Cloud, Gmail, Google AppEngine, Office365, Suncloud Windows, DropBox or Skydrive are examples of the public cloud.[472] The above-mentioned examples are classified as such because they enable many customers to share a large pool of storage and common computing resources.[473] The vast majority of consumers use cloud computing when they access or store emails no longer being stored on their own hard drive.[474]

While public cloud services, pre-packaged standard services without customization, are analogous to mass-market software, the "private cloud" is analogous to code developed in a development project for an institution's particular purposes.[475] With a public cloud, many customers share a common infrastructure. Cloud providers include both proprietary companies who charge for service levels and free services such as Google Docs (a Google product storing users' documents for online editing of Google's remote servers).[476] Cloud computing has differentiated into diverse offerings.[477]

---

472. *See* Dignan, *supra* note 455 (discussing some of these providers).

473. *See What Is a Public Cloud?*, MICROSOFT AZURE, https://cardinpartners.com/news/2017/7/28/cardin-partners-announces-q2-2017-update-to-saas10k-list-and-top-5-sectors-of-enterprise-saas-7l9h4 (last visited Apr. 3, 2019) (noting that one of the benefits of the public clouds is that employees can all use the same application) (on file with the Washington and Lee Law Review).

474. United States v. Comprehensive Drug Testing, Inc., 579 F.3d 989, 1005 (9th Cir. 2009)

> The advent of fast, cheap networking has made it possible to store information at remote third-party locations, where it is intermingled with that of other users. For example, many people no longer keep their email primarily on their personal computer, and instead use a web-based email provider, which stores their messages along with billions of messages from and to millions of other people. Similar services exist for photographs, slide shows, computer code, and many other types of data. As a result, people now have personal data that are stored with that of innumerable strangers. Seizure of, for example, Google's email servers to look for a few incriminating messages could jeopardize the privacy of millions.

475. *See supra* note 423 (discussing the core characteristics of the private cloud).

476. *See* Dignan, *supra* note 455 (comparing various providers).

477. *See* Justin Stoltzfus, *Why Do Companies Consider Platform Diversity to Be Important for Cloud Systems*, TECHOPEDIA,

C. Cloud Computing as an Access Contract

Cloud computing is not a single product, "but rather a continuum of services which businesses are able to access on an as-needed basis."[478] "Cloud computing uses remote servers and networks for data storage which may be accessed using web-enabled devices, such as computers, tablets, or smart phones."[479]

An "access contract" is defined as "a contract to obtain by electronic means access to, or information from, an information processing system of another person, or the equivalent of such access."[480] Cloud computing is an access contract providing "ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."[481]

Like an electricity grid or other utility, the cloud provider charges the user for what the user uses, allowing the user to benefit from the reduced cost of not purchasing or maintaining software on its premises because the user can access the system from any device with an Internet connection.[482]

Generally, a SaaS model gives the customer remote access to a software application, storage, or a virtual computer system and any other required software, operating system, hardware, or network. Software service agreements typically "grant maintenance services on the software, including providing upgrades, answering technical questions, and other support."[483]

---

https://www.techopedia.com/why-do-companies-consider-platform-diversity-to-be-important-for-cloud-systems/7/32450 (last visited Apr. 3, 2019) (stressing that even individual companies will often use multiple cloud providers, each one specialized for a specific purpose) (on file with the Washington and Lee Law Review).

478. IBM Corp. v. Visentin, 11 Civ. 399 (LAP), 2011 U.S. Dist. LEXIS 15342, at *15 (S.D.N.Y. Feb. 16, 2011).

479. Smith v. Barnesandnoble.com, LLC, 839 F.3d 163, 166 (2d Cir. 2016).

480. 10 HAWKLAND U.C.C. SERIES UCITA § 102:10 (June 2018) (defining an access contract).

481. MELL & GRANCE, *supra* note 458, at 2.

482. *See What is a Public Cloud?, supra* note 473 (describing these benefits).

483. SNMP Research Int'l, Inc. v. Nortel Networks Inc. (*In re* Nortel Networks

The parties may structure a subscription access contract for a designated period.

For businesses, subscription access contracts allow the customer to access the computing resources in the cloud rather than building an expensive computer center, employ IT personnel, and operate and maintain the data center. The proposed U.C.C. Article 2C must reflect the principal differences between licenses and subscription services. A licensee will not only gain access but the right to use and to copy the software, however, a subscriber only gets access to the software.

D. Cloud Computing and U.C.C. Article 2

1. Cloud Computing is a Service, Not an Article 2 Sale of Goods

Sale of goods translates in computer contracts to the computer company selling a computer system and building delivery architecture. With cloud computing, however, the customer buys access to an external service.[484] Cloud computing does not involve the passage of title for computer equipment or the installment of software applications, but rather is an access contract where the customer pays the cloud service provider for a specified term.[485] Another major difference between a U.C.C. Article 2 sale and cloud computing is that Article 2 sales are traditionally about a single tenant, whereas cloud computing transactions are multi-tenant, scalable, and elastic.

Cloud computing delivers software and data storage on demand as a commodified service.[486] Similar to gas and water services, cloud computing services are delivered as utility services.[487] Under the predominant purpose test, the court

---

Inc.), 573 B.R. 134, 139 (Bankr. D. Del. 2017).

484. *See What is a Public Cloud?*, *supra* note 473 (giving a basic outline of how clouds operate).

485. *See* Regalado, *supra* note 14 (describing the access model for cloud computing).

486. *See supra* Part II.A.3.a (discussing the predominant purpose test).

487. *See* Bob O'Donnell, *Cloud Computing as a Utility is Going Mainstream*, RECODE (Aug. 17, 2016, 1:00 PM),

determines whether the purpose of a given computer contract is to sell goods or to provide services.[488] SaaS does not involve selling goods, rather, SaaS deals with rendering services.[489] In most cases, the vendor does not even provide software to be downloaded to the user's computer; the vendor merely provides an access to its services and platform. Under SaaS agreements, no tangible goods are exchanged between the parties.

As case law demonstrates, Article 2 does not apply to agreements regarding the provision of services and is thus not relevant to cloud computing.[490] Chart Six demonstrates the essential differences between a transaction for sale of goods, and a cloud computing service offered as SaaS.

CHART SIX: CLOUD COMPUTING VS. THE SALE OF GOODS

Essential Characteristic of Cloud Computing	*U.C.C. Article 2*	*Software as a Service*
Sphere of Application	Tangible Goods	Services
Transfer of Title	Title passes from the seller to the buyer for the contract price.[491]	As no goods are involved typically, there is no passing of title between the parties.
Ownership	Buyer owns what buyer purchases.[492]	Service provider remains the owner of all hardware,

https://www.recode.net/2016/8/17/12519046/cloud-computing-as-utility-private-public-data-center (last visited Apr. 3, 2019) ("The idea is to leverage power, storage space and network connection pipes to deliver computing much like power or electricity.") (on file with the Washington and Lee Law Review).

488. *See supra* Part II.A.3.a (discussing how the predominant purpose test is applied to mix use contracts).

489. *See supra* note 423 and accompanying text (noting that, as a service, SaaS cannot easily fit into Article 2's framework).

490. *See supra* Part II.A.3.a (discussing cases in which courts had to test whether or not a mixed contract was governed by Article 2).

491. U.C.C. § 2-301 (AM. LAW INST. & UNIF. LAW COMM'N 2002) (outlining the general obligations of parties).

492. *Id.* (noting that the buyer must accept and pay for the good according to

		infrastructure and data that is offered to user within the scope of the service.
Method of Delivery	The tender of delivery in a sales contract "requires that the seller put and hold conforming goods at the buyer's disposition and gives the buyer any notification reasonably necessary to take delivery."[493]	On-Demand Self-Service: A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
What is Delivered	Computer systems are physically delivered and the default place for delivery is the seller's place of business.[494]	Broad Network Access: Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).
Shared Resources	Article 2 has no equivalent of	Resource Pooling: The provider's

the contract).

493. *Id.* § 2-503 (outlining the manner of the seller's tender of delivery).

494. *Id.* § 2-504 (maintaining default rules for the seller's shipment of goods).

	shared access to hardware. The default is a single seller and a single buyer. The gap filler for the delivery term is that goods are delivered in a single lot.[495] Article 2 does not recognize access contracts that are relational like SaaS.	computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.
Rapid Elasticity	Article 2 has no concept of elasticity where the seller can provision goods.	Capabilities can be elastically provisioned and released, in some cases automatically,

495. *Id.* § 2-507 (outlining the effect of the seller's tender).

	Article 2 requires sellers to deliver conforming goods and buyers to pay for them according to the contract.[496]	to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.
Measured Service	Article 2 does not adopt a principle of measured service. Article 2 sales transfer goods for a price.[497]	Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the

496. *Id.* § 2-601 (outlining the buyer's rights for how to handle an improper delivery).

497. *Id.* § 2-301 (outlining the general obligations of parties).

		utilized service.[498]

2. Cloud Computing Does Not Mesh with U.C.C. Article 2

SaaS is a services agreement and the provider "will not be delivering copies of the Software to Customer as part of the SaaS Services."[499] SaaS is a model for providing on-demand access to resources, regardless as to whether these resources are networks, storage, applications, or services.[500] For businesses, the benefits of cloud computing are cost savings, improved business agility, and improved responsiveness.[501] With SaaS, a customer can access software using Internet-enabled mobile devices, such as Apple iPhone and iPad, Google Android and Windows Phone and Kindle Fire.[502]

Under the SaaS, a user gains access to software applications through a provider hosted website.[503] On the provider-hosted website, the customer does not need to install or maintain expensive IT infrastructure to use and maintain the software.[504] Unlike the sale of goods, SaaS contracts do not include the purchasing of hardware or software.[505] Under the SaaS model, unlike traditional licensing, the customer neither downloads nor

498. Marilyn Lamar & Kristen B. Rosati, *Privacy Compliance in the Crosshairs of Competing Policies*, 20110209 AHLA SEMINAR PAPERS 95 (2011).

499. *7 Point "OPS" Software as a Service Agreement (V.1.02),* 7POINTOPS, https://www.7pointops.com/terms (last updated Mar. 16, 2016) (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

500. *See* Lamar & Rosati, *supra* note 498 (describing SaaS as "[t]he capability provided to the consumer is to use the provider's applications running on a cloud infrastructure.")

501. *See What is SaaS?*, MICROSOFT, https://azure.microsoft.com/en-us/overview/what-is-saas/ (last visited Apr. 3, 2019) ("SaaS allows your organization to get quickly up and running with an app at minimal upfront cost.") (on file with the Washington and Lee Law Review).

502. *See id.* ("SaaS makes it easy to 'mobilize' your workforce because users can access SaaS apps and data from any Internet-connected computer or mobile device.").

503. *See id.* ([SaaS software] is located on the service provider's network.").

504. *See id.* ("Users can run most SaaS apps directly from their web browser without needing to download and install any software.").

505. *See id.* (explaining that using SaaS does not require any additional hardware or software other than potentially "plugins").

installs software on its computer because the software is subject to a license agreement.[506] Since SaaS is an access contract, there is no software to install.[507]

With cloud computing and licensing, there is no title passing from the provider to the customer, rather, license agreements grant the customer the right to use the software subject to certain terms and limitations.[508] In cloud computing, the customer enters into an access agreement for the allotted time the customer may use the provider's service.[509]

Support services will often be included in the subscription agreement, under which the provider agrees to maintain the then-current version or release of the services.[510] U.C.C. Article 2 applies to sales and has no relevance to hosted services.[511] Article 2 is disconnected to subscription service provider agreements.[512]

The typical SaaS agreement specifies what services will be provided to customers and these services are contracted on a subscription basis.[513] These subscriptions are not "sold."[514] SaaS agreements will typically specify services and deliverables subject to acceptance testing.[515] SaaS agreements include support services

---

506. *See id.* (noting that typically nothing needs to be installed with SaaS).

507. *See id.* (detailing that SaaS facilitates the access of software).

508. *SaaS License Agreement: Everything You Need to Know*, UPCOUNSEL, https://www.upcounsel.com/saas-license-agreement (last visited Apr. 3, 2019) (describing how SaaS licenses work) (on file with the Washington and Lee Law Review).

509. *Id.*

510. *Id.*

511. *See* Richard Raysman, *The UCC and Software Contracts: Recent Developments*, HOLLAND & KNIGHT, https://www.hklaw.com/digitaltechblog/the-ucc-and-software-contracts-recent-developments-02-18-2011/ (last updated Feb. 18, 2011) (last visited Apr. 3, 2019) (describing the interaction of the U.C.C. and software contracts) (on file with the Washington and Lee Law Review).

512. *See id.* (noting that software license agreements are often not covered by U.C.C. Article 2.)

513. *See* 6 WARREN'S FORMS OF AGREEMENTS § 61.1 (2018*)* ("With SaaS, the customer does not license the software, pay for software maintenance, support and updates and run it on its own servers. Instead, the customer in essence rents the software, and the vendor runs the software on its servers.").

514. *See* 1 RODITTI & RUSTAD, *supra* note 13, § 8.01 ("Software is . . . typically not sold.")

515. *See* RUSTAD, *supra* note 197, § 4.02[4], 373; *see also id.* § 8.12[3], 1007–09

such as provider's updates and enhancements;[516] however, these updates are not addressed by any U.C.C. provision. Article 2 warranties address affirmations of fact about the goods,[517] their merchantability,[518] and fitness for a particular purpose.[519] None of these warranties extends to subscription agreements.[520] SaaS subscription agreements adopt the common law of services as the measure of delivered services.[521] In *Analytical Graphics, Inc. v. United States*,[522] the court explained that under a subscription service, customers do not receive a copy because:

> [T]he software sits on the contractor's computer and the government merely accesses it via the Internet. With no copies, copyright plays no role in the transaction, so the government does not need a copyright license. During the term of the contract, the contractor shall provide the application to the government via the Internet.[523]

Under Article 2, a seller's primary obligation is to tender conforming goods to the buyer.[524] "Tender of delivery requires that the seller put and hold conforming goods at the buyer's disposition and give the buyer any notification reasonably necessary to enable him to take delivery."[525] SaaS subscription agreements do not involve a tender of anything and instead give the customer access to software, data storage, and intangibles on an on-demand basis.[526] SaaS examples include "apps like Salesforce's Sales

---

(detailing acceptance provisions in a SaaS Service Provider Agreement Favoring Customer).

516. For an example of support service provisions, *see id.* § 8.12[3], 1009.

517. *See* U.C.C. § 2-313 (AM. LAW. INST. & UNIF. LAW COMM'N 2018) (defining express warranties).

518. *See id.* § 2-314 (defining the implied warranty of merchantability).

519. *See id.* § 2-315 (defining the warranty of fitness for a particular purpose).

520. *See id.* §§ 2-313–2-315 (defining various warranties without describing subscription agreements).

521. *See* discussion *supra* notes 95–101 and accompanying text.

522. 135 Fed. Cl. 378, 383 (Fed. Ct. Cl. 2017).

523. *Id.* at 382.

524. *See* U.C.C. § 2-501 (AM. LAW. INST. & UNIF. LAW COMM'N 2018). (describing the duty of a seller during a transaction).

525. *Id.*

526. *See SaaS License Agreement: Everything You Need to Know, supra* note 508.

Cloud, Microsoft's Office 365 and Google's G Suite live in the cloud instead of on your hard drive."[527]

E. Key Terms in Cloud Contracts

Cloud contracts, particularly for corporate customers, generally consist of MSAs and SLAs.[528] MSAs set forth the general obligations of the parties concerning the services to be provided by the cloud service provider, and regulate such issues as intellectual property rights, confidentiality, and termination.[529] SLAs, on the other hand, are agreements to establish the performance level of a service.[530] As the name suggests, SLAs spell out what services a customer should expect, including "terms such as specifications for privacy, timeliness, responsiveness, resource efficiency, metrics for measuring usage, rights of users to audit security, interoperability and remedies in the event of a service interruption."[531]

According to a recent study, 41% of all enterprise workloads ran on a public or private cloud in 2016.[532] This study demonstrates how heavily businesses rely on cloud computing services to carry

---

527. Tony Lystra, *Software as a Service in 2018: Artificial Intelligence and New Apps Are Reshaping a Key Cloud Sector*, DIGITAL MARKETING (Nov. 6, 2017), https://www.digitalcurrent.com/digital-marketing/vital-saas-trends-2018/ (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

528. *See What Is an SLA and How to Find It?*, SLA-READY, http://www.sla-ready.eu/what-sla-and-how-find-it (last visited Apr. 3, 2019) ("SLAs are, becoming increasingly part of the cloud-based landscape.") (on file with the Washington and Lee Law review).

529. *See* 1 RODITTI & RUSTAD, *supra* note 13, § 2.06 ("[T]he Master Services Agreement (MSA) is the general agreement between the cloud customer (buyer) and the cloud provider (seller).").

530. *See id.* ("The Service Level Agreement (SLA) is a service contract that defines the terms of cloud computing service between the provider and customer.").

531. *Commission Report on Cloud Computing Contracts*, *supra* note 20, at 19.

532. *See* Michael Essery, *Enterprise IT Executives Expect 60% of Workloads Will Run in the Cloud by 2018*, 451 RESEARCH (Sep. 1, 2016), https://451research.com/blog/764-enterprise-it-executives-expect-60-of-workloads-will-run-in-the-cloud-by-2018 (last visited Apr. 3, 2019) (describing an expected rate of increase in cloud computing) (on file with the Washington and Lee Law Review).

out their daily operations.[533] Cloud services often involve vendors storing valuable information, trade secrets, or legally protected personal data, on behalf of their customers.[534]

In some cases, a business' day-to-day operations depend upon cloud services.[535] In practice, a business may be using cloud services for a variety of purposes, ranging from simply storing employee or client data, to accounting.[536] While this is the case, the lack of legislative guidance allows vendors of mass-market services to operate on licensing-like agreements, unduly limiting their obligations and liabilities, at times without considering the potential risk for customers. [537]

A cloud contract is a services contract where there is no statutory guidance or well-established industry standards setting forth best practices.[538] No court has determined whether SaaS providers have a duty to maintain adequate disaster protection.[539] Consider two examples: Storing valuable data on the cloud as backup and cloud bursting (switchover when in-house data centers are unable to handle processing loads). No court has imposed a

---

533. *See id.* (noting that businesses will increasingly rely on cloud software).

534. *See id.* ("451 Research predicts strong growth in critical enterprise workload categories, such as data and analytics and business applications.").

535. *See id.* ("Cloud-first (an approach where a cloud solution is considered or prioritized for all workload deployments) is common among enterprises.").

536. *See What is SaaS?*, *supra* note 501 (describing some of the uses of cloud based software).

537. *See* 6 WARREN'S FORMS OF AGREEMENTS, *supra* note 513, § 61.1 (noting that service level agreements with SaaS vendors typically limit the vendor's liability for service disruptions, security breaches and other problems affecting customers).

538. *See* Thomas Trappler, *If It's in the Cloud, Get It on Paper: Cloud Computing Contract Issues*, EDUCAUSE REV., https://er.educause.edu/articles/2010/6/if-its-in-the-cloud-get-it-on-paper-cloud-computing-contract-issues (last updated June 24, 2010) (last visited Apr. 3, 2019) (conducting "extensive research into best practices" for cloud contracts, without coming to final conclusions) (on file with the Washington and Lee Law Review).

539. *See* Michael R. Overly, *Drafting and Negotiating Effective Cloud Computing Agreements*, LEXISNEXIS, https://www.lexisnexis.com/lexis-practice-advisor/the-journal/b/lpa/archive/2015/11/30/drafting-and-negotiating-effective-cloud-computing-agreements.aspx (last updated Nov. 30, 2015) (last visited Apr. 3, 2019) (noting that entities using cloud services should negotiate disaster recovery clauses into their contracts) (on file with Washington and Lee Law Review).

duty on SaaS providers to implement redundancy in their service provisions.[540]

Some of the important issues during cloud computing contract negotiations include what law will apply to potential disputes, and what are the liabilities of the vendor, including compliance with laws.[541] SaaS presents a significant challenge for choice of law because it marginalizes the concept of territoriality.[542] "Given that the rules of contract differ among nations, which country's laws would be used to determine whether in fact there had been a breach of contract by the service provider?"[543]

Other key contract terms for SaaS agreements include: (1) the parties, including authorized users on the customer side, (2) specific services undertaken by the service provider, (3) access grant and licensing, (4) any use restrictions, (5) service level, availability and support requirements, and remedies for service provider's failure to comply with such requirements, (5) intellectual property rights of the service provider, (6) data security and confidentiality, (7) limitation of liability, (8) fees, payment and remedies for customer's failure to make payments, (9) suspension of services, and (10) term and termination, and liabilities following termination.[544]

The significant terms in cloud contracts concerning a private cloud are "disaster recovery, and portability of services upon termination.[545] For a public cloud, a number of major elements-including single vs. multiple customers on a computer

---

540. *See id.* (noting that redundancy is an issue to be considered during contract negotiations).

541. *See id.* ("[P]rovisions such as insurance, indemnity, intellectual property, limitations of liability, and warranties remain important [in a cloud based contract].").

542. *See* Anthony Gray, *Conflict of Laws and the Cloud*, 29 COMPUTER L. & SECURITY REV. 58, 58–60 (2013) (noting the "frustration and difficulty in seeking to apply legal rules that are largely territorial based . . . to a thing like cloud computing which is decidedly non-territorial in nature").

543. *Id.* at 59.

544. *See* Overly, *supra* note 539 (noting things which should be included in a cloud contract).

545. Peter M. Lefkowitz, *Contracting in the Cloud: A Primer*, 54 BOSTON B.J. 9, 11 (2010).

server or database, data migration, business continuity/disaster recovery, retention and core security controls."[546]

Service credits are typically the sole remedy proposed by SaaS providers, and are capped at "some percentage of fees paid during the previous 12-month period."[547] In some cases, the service credit "is simply window dressing,"[548] rather than "a meaningful economic remedy that would deter the vendor from breaching the SLA,"[549] with the law offering no protection to consumers and business users alike.[550]

Article 2C rules for SLAs should specify defaults for: (1) availability of service, (2) performance requirements, such as response and error correction times, (3) security obligations of the provider, including disaster recovery, (4) process for notification of problems, and (5) remedies, such as service credits or penalties.[551]

The new U.C.C. Article should also provide defaults for what pre-contractual information consumers should receive in business-to-consumer (B2C) SaaS agreements.[552] Article 2C defaults should address issues such as whether providers can reallocate the risk of service interruption, security breaches and other lapses in service to customers with impunity.[553] "Service level agreements are generally considered to fall under the scope of the unfair consumer contract terms regulations. In this sense, overly restrictive service level agreements could indeed be considered as unfair."[554] State unfair and deceptive trade practices likely extend to B2C contracts where the provider uses service

---

546. *Id.*

547. John Pavolotsky, *Top Five Legal Issues for the Cloud*, FORBES (Apr. 13, 2010), https://www.forbes.com/2010/04/12/cloud-computing-enterprise-technology-cio-network-legal.html#4bcf0252ebe8 (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

548. *Id.*

549. *Id.*

550. *Id.*

551. *See Commission Report on Cloud Computing Contracts*, *supra* note 20, at 8–11 (describing findings from a comparative law study on what various entities should be included in future cloud contract laws).

552. *See id.* at 8, 11–12 (detailing potential B2C requirements for future cloud-based contract laws).

553. *See id.* (exploring potential requirements for future cloud-based contract laws).

554. *Id.* at 9.

terms to eliminate any meaningful remedy in the event of a service interruption or permanent loss of data.[555]

F. Proposed Article 2C's Roadmap

"Experts have coined the term 'Web 2.0' to describe the shift in Internet usage from consumption to participation and metaphorically refer to this virtual platform as 'the cloud,' where users interact with Internet applications and store data on distant servers rather than on their own hard drives."[556] While cloud computing is deemed as "one of the most significant technical advances . . . of the decade,"[557] cloud providers such as Google, Microsoft, Amazon Web Services (AWS), and Oracle draft their contracts and offer their services in a legislative and judicial void. Nevertheless, "[t]he adoption of Cloud computing does not depend only on technological advances and favourable economic conditions but also on the risk perception and the risk attitude of decision makers like Government officers and IT risk managers."[558]

Google Cloud Services recently stopped "one of the most controversial advertising formats: ads inside Gmail that scan users' email contents."[559] The decision did not come from a regulatory or statutory requirement rather this decision came from Google's desire "to sign up more corporate customers."[560] Neither

---

555. *Id.* ("[O]verly restrictive service level agreements could indeed be considered as unfair.").

556. David A. Couillard, Note, *Defogging the Cloud: Applying Fourth Amendment Principles to Evolving Privacy Expectations in Cloud Computing*, 93 MINN. L. REV. 2205, 2205 (2009) (footnotes omitted).

557. King & Raja, *supra* note 438, at 418.

558. Gianfranco Elena & Christopher W. Johnson, *Laypeople's and Experts' Risk Perception of Cloud Computing Services*, 5 INT'L. J. CLOUD COMPUTING: SERVICES & ARCHITECTURE 2 (2015). https://pdfs.semanticscholar.org/41d3/6365881414a861357b067df55910757b8f69.pdf.

559. Mark Bergen, *Google Will Stop Reading Your Emails for Gmail Ads*, BLOOMBERG (June 23, 2017), https://www.bloomberg.com/news/articles/2017-06-23/google-will-stop-reading-your-emails-for-gmail-ads (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).

560. *Id.*

Congress nor regulators have weighed in on whether Google's initial decision to scan user e-mails for advertising purposes violated U.S. law.[561]

According to a study carried out by the European Commission, user concern over using the cloud focuses on "how liability for service failures such as downtime or loss of data will be compensated, user rights in relation to system upgrades decided unilaterally by the provider, ownership of data created in cloud applications or how disputes will be resolved."[562] Customers also express dissatisfaction with SLA provisions on security.[563] SLAs often reallocate the risk of service interruption, security breaches and other lapses in service to customers.[564]

In the European Union, the Commission noted "the complexity and uncertainty of the legal framework for cloud services providers means that they often use complex contracts or service level agreements with extensive disclaimers."[565] Article 2C of the U.C.C. will fill the existing legal void through the creation of a cloud computing roadmap of default terms.[566] Article 2C will focus on transactions relating to SaaS and in this way deal with cloud computing. The proposed Article 2C will update commercial law to address the largest and most important segment of the computer industry.[567] Like the rest of the U.C.C., Article 2C is intended to

---

561. *See* John D. McKinnon & Douglas MacMillan, *Google Says It Continues to Allow Apps to Scan Data From Gmail Accounts*, WALL ST. J., https://www.wsj.com/articles/google-says-it-continues-to-allow-apps-to-scan-data-from-gmail-accounts-1537459989 (last updated Sept. 20, 2018) (last visited Apr. 3, 2019) (noting that while congress has questioned Google about the practice, it has not officially weighed in on the practice's legality) (on file with the Washington and Lee Law Review).

562. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Unleashing the Potential of Cloud Computing in Europe*, EUR. COMM'N, at 5, COM (2012) 52 final (Sept. 27, 2012) [hereinafter Unleashing the Potential of Cloud Computing in Europe].

563. *See generally* Gartner Research Report, *Cloud Contracts Need Security Levels to Better Manage Risk* (Mar. 13, 2013).

564. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 24 (noting potential abuses in SLAs).

565. Unleashing the Potential of Cloud Computing in Europe, *supra* note 562, at 11.

566. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 9–12 (detailing the deficiencies in current cloud contract law).

567. Nick Ismail, *Cloud Computing is Becoming More and More Important for*

create a uniform system across the country for creating, interpreting and enforcing SaaS.[568]

Article 2C and the default rules for SaaS contracts must answer questions such as: (1) What obligations do cloud providers have to segregate data? (2) Must providers use encryption in the design of cloud security? (3) What are the minimum representation and warranty requirements for providers? (4) What remedies are there for breach of violations of MSAs and SLAs? (5) How are upgrades and maintenance in hardware and software handled? (6) What responsibility does the cloud provider have for proper patching and versioning control? (7) What are cloud providers' responsibilities concerning data exporting upon termination of services?[569]

To answer these questions, the first task of Article 2C is to develop uniform ways of defining and conceptualizing cloud computing.[570] This specialized statute will define the meaning of terms including but not limited to cloud migration, public cloud, private cloud, hybrid cloud, cloud portability, cloud provisioning, cloud server hosting, and other specialized definitions. Article 2C must standardize the vocabulary in subscription agreements, including those relating to operationalizing uptime, accessibility, disaster recovery, and backup, as well as network availability, disaster recovery and business continuity, security incidents, transparency, data privacy, and data control.[571] Defaults need to address the customer's right to third-party audits, data migration,

---

Businesses, INFO. AGE (Aug. 7, 2017), https://www.information-age.com/cloud-computings-importance-businesses-123467712/ (last visited Apr. 3, 2019) (emphasizing the increased importance of cloud computing) (on file with the Washington and Lee Law Review).

568. *See* U.C.C. § 1-103 (AM. LAW INST. & UNIF. LAW COMM'N 2001) (noting that one of the goals of the U.C.C. is "to make uniform the law among the various jurisdictions.")

569. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 9–12 (highlighting several deficiencies in current cloud computing contracts).

570. *See* U.C.C. § 1-103 (explaining that a major goal of the U.C.C. is uniformity).

571. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 9–12 (noting a lack of uniformity in current cloud computing contracts); U.C.C. § 1-103 (noting the U.C.C. goal of uniformity);

and assurance that they will not be victimized by vendor lock-in.[572] Customers must know what measures SaaS providers will take to address concerns such as vulnerability to attack, standard security practices, and being subject to data storage laws such as the European Union's General Data Protection Regulation.[573]

Article 2C's defaults on security and access controls must address input validation, processing controls, output reconciliation controls, access controls, encryption, change management controls, backup and recovery, physical and logical controls, and data destruction controls.[574] The Article 2C Reporter will devise defaults for (1) the exclusion of limitation of liability and remedies particularly for data integrity and disaster recovery; (2) service levels, including availability; (3) security and privacy; (4) lock-in and exit including term, termination rights, and return of data on exit; (5) providers' ability to change service features unilaterally; and (6) intellectual property rights.[575]

The International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) have published three standards on cloud computing, to define what cloud computing is,[576] provide a reference architecture,[577] and set

572. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 54 ("In France, the statutory obligation to perform a contract in 'good faith' has led the courts to impose a cooperation obligation upon a service provider to help its customer migrate data after the termination of the contract.").

573. *See* Regulation (EU) 2016/679, of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data and Repealing Directive 95/46/EC (General Data Protection Regulation) ("The protection of natural persons in relation to the processing of personal data is a fundamental right.").

574. RUSTAD, *supra* note 197, § 8.01[4][c], 862–63 (noting these among the important elements of the "sufficient security and access controls" that customers should obtain from providers within the scope of a written agreement).

575. These terms were identified as the most frequently negotiated cloud computing agreement clauses. *See* Kuan Hon, Christopher Millard & Ian Walden, *Negotiating Cloud Contracts: Looking at Clouds From Both Sides Now*, 16 STAN. TECH. L. REV. 79, 81 (2012) ("[O]ffer[ing] a qualitative analysis of negotiations of cloud computing contract terms over a particular time period.").

576. *Cloud Computing Overview & Vocabulary No. 17788:2014*, *supra* note 15, at 1 (providing "an overview of cloud computing along with a set of terms and definitions").

577. *Id.*

forth the standards for cloud computing SLAs in 2016,[578] all of which would serve as guidelines for the Article 2C Reporter in defining various terms specifically for cloud computing.

Following this, our proposed U.C.C. Article 2C will address rules for determining: (1) parties' choice of law; (2) describing and measuring service levels; (3) service variations and limits on the unilateral modification of the functionalities or characteristics of the services initially offered; (4) rules for term, termination and whether automatic renewal should be allowed; (5) whether providers or users should have a right to cure a breach; (6) responsibility of the parties after termination of the agreement (i.e. provider's duty to return customer data or transfer it to a new provider); (7) ability of the provider to cap damages and whether exceptions should be carved out for breaches of confidentiality, data protection, and intellectual property rights; (8) indemnification for breaches of acceptable use and intellectual property infringements; (9) suspension of services rules and whether notice is required, except for example, in the event of a user's fraudulent or illegal activities; and (10) responsibility of the parties concerning data protection depending upon the nature of the data and data processing.[579]

Article 2C will likely emerge as the chief source of computer contracting law incorporating some U.C.C. Article 2 concepts while simultaneously developing specialized legal infrastructure to address the unique problems of software subscription agreements. The practical effect of Article 2C will be to create a specialized article for software services providing ground rules for access contracts.

Our contract law default roadmap for U.C.C. Article 2C is only the first step to creating a new U.C.C. article. Article 2C's Reporter will develop specialized contractual defaults only after consultation with diverse stakeholders in the software industry, consumer organizations, government, the ABA Business Law Committee, and other interested groups. Article 2C will need to be

578. *Id.*

579. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 9–12 (demonstrating several needs of cloud contract law); U.C.C. § 1-103 (AM. LAW INST. & UNIF. LAW COMM'N 2001) (highlighting the U.C.C. goal of uniformity).

fleshed out to develop default terms to ensure these terms are not tilted in favor of cloud providers.[580] For example, liquidated damages clauses should only be enforceable where they do not have a penal effect.[581]

This law reform project has the potential of updating computer contract law while bringing greater certainty to the access contracts constituting SaaS.[582] Article 2C will be the first computer contract law dealing with services relying less upon Article 2 than any prior computer contracting form. Article 2C's defaults must reflect the interests of customers as well as providers.[583] If enacted, Article 2C will provide uniform legal rules for the largest sector of computer contracts.[584] Chart Seven below sketches out the proposed parts of U.C.C. Article 2C and what major issues will be addressed.

CHART SEVEN: ARTICLE 2C ADDRESSING SAAS AGREEMENTS

Parts of U.C.C. 2C	Purpose of Provision
Part I: General Provisions	2C-101 (Short Title); 2C-102 (Definitions)[585]; 2C-103, (Scope);[586] 2C-104 (Choice of Law); 2C-105 (Choice

580. *See* Trappler, *supra* note 538 (noting that, currently, "[a] cloud computing provider's standard contract is typically written to favor that company").

581. *See* Ken Adams, *As Liquidated Damages and Not as a Penalty*, ADAMS ON CONTRACT DRAFTING (Feb. 4, 2014), https://www.adamsdrafting.com/as-liquidated-damages-and-not-as-a-penalty/ (last visited Apr. 3, 2019) (noting the difficulties of the interaction between penalties and liquidated damages) (on file with the Washington and Lee Law Review).

582. *See Commission Report on Cloud Computing Contracts, supra* note 20, at 9–12 (noting several issues with cloud computing contracts).

583. *See* Trappler, *supra* note 538 (noting that current cloud computing contracts often favor providers).

584. *See* Ismail, *supra* note 567 (noting the importance of cloud contracts).

585. *See Int'l. Standard: Info. Tech. Cloud Computing Architecture, ISO/IEC 17789:2014*, INT'L ORG. FOR STANDARDIZATION, Oct. 10, 2015, at 1 (providing a reason why the definitions section will define three cloud capabilities types: (1) application capabilities type (2) platform capabilities type; and (3) infrastructure capabilities type, as well as deployment models: (1) public cloud; (2) private cloud; (3) community cloud; and (4) hybrid cloud.).

586. Article 2C's scope should be limited to SaaS.

	of Forum); 2C-106 (Access Contracts); 2C-107 (Right to Access Cloud Through Broad and Ubiquitous Network Access (i.e. laptops, smartphones etc.))
Part II: Formation and Construction of the SaaS Agreement	2C-201 (Formal Requirement); 2C-202 (Parol Evidence Rule; Formation Rules); 2C-203 (Right of Customer to Access Service When Required); 2C-204 (Firm Offer); 2C-205 (Liberal Formation Rules); 2C-206 (Supplemental Terms, Course of Performance, Course of Dealing and Usage of Trade); 2C-207 (Modifying a SaaS Agreement)
Part III: Service Representations	2C-301 (Warranty of Authority); 2C-302 (Warranty of Noninfringement); 2C-303 (Express Warranties of Service Level Obligations);[587] 2C-304 (Implied Quality of Service Level Obligations); 2C-305 (Services Fit for a Particular Purpose); 2C-306 (Disclaimers and Modifications of Service Warranties)
Part IV: Performance of the SaaS Agreement	2C-401 (Standard for Performance); 2C-402 (Rejection); 2C-403 (Provider's Right to Cure); 2C-404 (Customer's Right of Revocation); 2C-405 (Duty of Provider to Return or Transfer Data to Another Provider); 2C-406 (Customer's Duty to Pay Subscription Fees); 2C-407 (Right of Data Portability)

587. The most important express warranty will address service levels including availability. Cloud service providers may also make express warranties as to security, privacy, lock-in and exit, to name a few subjects where service providers may make affirmations of fact that go to the basis of the bargain for services rendered.

Part V: Security & Privacy	2C-501 (Duty to Segregate Customer's Data in Multi-Tenancy Public or Hybrid Cloud); 2C-502 (Remedies for Service Interruption); 2C-503 (Duty of Provider to Have Redundancies Built Into Platform); 2C-504 (Disaster Recovery and Backups)
Part VI: Cloud Service Provider's Duties	2C-601 (Duty to Perform Service Trials); 2C-602 (Duty to Monitor Service); 2C-603 (Duty to Administer Service Security); 2C-604 (Duty to Provide Customer With Billing and Usage Reports); 2C-605 (Handle Problem Report; 2C-606 (Administer Multi-Tenancies)[588]
Part VII: Cloud Service Customer's Rights (CSC)[589]	2C-701 (Right of Data Accessibility, Processing & Ownership)[590]; 2C-702 (Right to Audit Provider's Logs); 2C-703 (Right of Data Portability,[591] Protection Against Vendor Lock-in)

588. *Int'l. Standard: Info. Tech. Cloud Computing Reference Architecture*, *supra* note 585, at 10.

589. *See Eileen* Feretic, *There's No Escaping the Cloud*, BASELINE (June 16, 2011) http://www.baselinemag.com/c/a/IT-Management/Theres-No-Escaping-the-Cloud-595183 (last visited Apr. 3, 2019) ("Survey respondents hold very low opinions of the service-level agreements they are getting from vendors. . . . That's why we believe that the first essential-but-unknown success factor in cloud implementation is a strong focus on SLAs.") (on file with the Washington and Lee Law Review).

590. The subscription agreement should provide expressly that the customer will retain ownership of all of its content, data, and any analytics.

591. *Int'l. Standard: Info. Tech. Cloud Computing Reference Architecture*, *supra* note 585, at 26

> Portability is significant in cloud computing since prospective cloud service customers are interested in avoiding lock-in when they choose to use cloud services. Cloud service customers need to know that they can move cloud service customer data or their applications between multiple cloud service providers at low cost and with minimal disruption. The amount of cost and disruption that is acceptable can vary based upon the type of cloud service that is being used.

Part VIII: Term & Termination of the SaaS Agreement	2C-801 (Defining Terms); 2C-802 (Duty of Customer to Give Notification of Termination); 2C-803 (Duties of Providers to Safeguard Customer's Data and Transfer It to Customer or Another Provider); 2C-804 (Data Accessibility, Processing, and Ownership)
Part IX: Remedies in the Event of Breach	2C-901 (Overview of Customer's Remedies); 2C-902 (Overview of Provider's Remedies); 2C-903 (Limitations on Use of Service Level Credits as Sole and Exclusive Remedy); 2C-904[592] (Enforceability of Liquidated Damages); 2C-905 (Provider's Liability to Third Parties for Infringement); 2C-906 (Provider's Liability for Violating Data Protection Law); 2C-907 (Notice and Takedown of Illegal Content)

VI. Conclusion

The existing U.C.C. does not provide the computer industry with the necessary contractual infrastructure that appropriately balances the rights and obligations of the parties in connection with either licensing or cloud computing.[593] Article 2 was drafted four decades before e-mail was part of the popular consciousness

592. *See* Hon, Millard & Walden, *supra* note 575, at 81 (noting the "exclusion or limitation of liability and remedies, particularly regarding data integrity and disaster recovery" as one of the most commonly negotiated terms in subscription agreements).

593. *See id.* ("In a 2010 survey of some thirty standard terms of cloud providers, most terms surveyed were found, unsurprisingly, to be weighted in favor of the provider, and many were potentially non-compliant, invalid, or unenforceable in some countries.").

and information could be stored and uploaded from the Internet, and more than five decades before online social networks.[594] To properly serve society and to keep pace with artificial intelligence, autonomic computing, big data, biometrics, cyber security, mobile IT, the Internet of Things, smart contracts and virtual networking, computer contracting law must be updated.[595] To date, U.C.C. Article 2 has served as the primary source of law for sales and leases of computer systems, as well as for licenses, to which it has limited relevance.[596] While Article 2 does not mesh well with licensing, it has even less relevance to SaaS.[597]

Software licensing and SaaS transactions differ substantively from sale and lease transactions.[598] Licenses involve granting a right to use a software application, as opposed to selling software in the manner a tangible good is sold.[599] SaaS providers operate vendor software, rather than legacy systems, where software is installed on the customer's premises.[600] The primary difference between cloud computing and an Article 2 sale of goods is that SaaS agreements are conditional access contracts where title never passes from the provider to the customer, however under Article 2 sale of goods this is not the case.[601] The acronym "As a Service" signifies the common law of services because it involves hosting and supporting services traditionally outside of Article 2's sphere of application.[602]

---

594. *See* Kim Ann Zimmerman, *History of Computers: A Brief Timeline*, LIVE SCIENCE, (Sept. 6, 2017) https://www.livescience.com/20718-computer-history.html (last visited Apr. 3, 2019) (providing a timeline of computing achievements, including the introduction of Facebook and the beginnings of the internet) (on file with the Washington and Lee Law Review).

595. *See* Stacy-Ann Elvy, *Contracting in the Age of the Internet of Things: Article 2 of the U.C.C. and Beyond*, 44 HOFSTRA L. REV. 839, 840 (2016) (noting potential contract issues with the Internet of Things).

596. *See supra* Part IV.D (discussing the interplay between cloud contracts and the U.C.C.).

597. *See id.* (noting how SaaS contracts are not properly covered by the U.C.C.).

598. *See id.* (noting the peculiarities of SaaS contracts).

599. *See id.* (explaining an unusual feature of SaaS contracts).

600. *See What is SaaS*?, *supra* note 501 (providing a brief overview of SaaS services).

601. *See supra* part IV.D (explaining why Article 2 does not accurately deal with SaaS contracts).

602. *See* David M. Steingold, *When Does the UCC Not Apply*?, NOLO (May

Updating the U.C.C. to account for software contracts in the new millennium is urgently needed.[603] This article has proposed two new U.C.C. Articles 2B and 2C to address software licensing and SaaS, to resolve the discrepancies between Article 2 sales, and licensing and cloud computing.[604] Updating the U.C.C. to account for the two most dominant computer contracting practices in the new millennium is required to streamline computer contracting and allow industry growth under clarity and uniformity of the law.[605]

2013), https://www.nolo.com/legal-encyclopedia/when-does-the-ucc-not-apply.html (last visited Apr. 3, 2019) (noting that services typically are not covered by the U.C.C.) (on file with the Washington and Lee Law Review).

603. *See supra* Part IV (noting that the U.C.C. should be updated to account for cloud-based contracts).

604. *See supra* Parts III–IV (proposing new sections of the U.C.C.).

605. *See supra* Parts III–IV (explaining the need for new sections of the U.C.C. to account for cloud-based contracts).