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A Commercial Law for Software Contracting

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Michael L. Rustad* and Elif Kavusturan**

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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. The ALI and the NCCUSL approved the original U.C.C. and introduced the model statute in state legislatures throughout the United States. “By 1949, the flexible contract rules of today’s Code were largely in place.” Pennsylvania was the first state to enact the U.C.C., followed by Massachusetts in 1958. By 1966, 48


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.


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. The U.C.C. is a comprehensive commercial statute enacted in every jurisdiction, making it the most successful codification project in Anglo-American history. U.C.C. Article 2 applies to transactions of goods, offering the parties to sales agreement extensive contractual rights, protections and limitations. “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.” Nevertheless, the last set of major amendments to U.C.C. Article 2 took place in 1958, sixty-one years ago.

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

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


are software licensing and software-as-a-service (SaaS). 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.”

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. 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.

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. Beginning in the 1970s, however, U.S. courts stretched sales law to computer

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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. “Most courts have held that computer software qualifies as a ‘good,’ but legal uncertainty continues with regard to certain software transactions.” 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.

Even though U.C.C. Article 2 has limited relevance to licensing and even less relevance to SaaS, 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, 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. This is an important issue because these software contracting forms are crucial to America’s information technology infrastructure.

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.”).
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.
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. 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. In 1987, the drafters of U.C.C. Article 2A tailored U.C.C. Article 2 rules for personal property leases. Today, software licensing and cloud computing are rapidly displacing sales and leases. Unfortunately, neither Article 2 nor 2A provide workable default terms for these rapidly evolving contracting practices.

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.” 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.

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).


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.”).


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

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.

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.

   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.

   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.\textsuperscript{34}

In 2009, the ALI approved the Principles of the Law of Software Contracts\textsuperscript{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.\textsuperscript{36} The ALI’s Principles defer largely to software industry practices when it comes to consumer protection.\textsuperscript{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.”\textsuperscript{38} To date, however, no court has cited the Principles to construe a license agreement.\textsuperscript{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.\textsuperscript{40} In the following years, some courts even extended Article 2 to custom software development

\textsuperscript{34} See Rustad & Onufrio, supra note 12, at 39 (explaining the backlash against the UCITA due to the law’s “anti-consumer features”).

\textsuperscript{35} See generally Principles of the Law of Software Contracts (Am. Law Inst. 2010).

\textsuperscript{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).


\textsuperscript{38} Principles of the Law of Software Contracts, supra note 35, § 3.05.

\textsuperscript{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.

\textsuperscript{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. In the absence of an alternative statute, U.S. courts have extended U.C.C. Article 2 to all software contracts. 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. 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. 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.

Part IV argues that the ALI and the NCCUSL should propose a new Article 2B for software licensing. Article 2B is necessary as a contract roadmap for one of the most important computer contracting practices of today. 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, and many others.

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. New Article 2B will also extend contractual default rules from former Article 2B and UCITA.

Part V recommends a new Article 2C for SaaS. Article 2C will provide the industry with a contract law roadmap for cloud computing contracts. 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.

Proposed Article 2C will establish contracting law defaults for service levels and service level agreements, while reducing non-uniformity of cloud contracting practices.

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. 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.

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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. Infa Part V.
58. Infa 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, and noted that an “increase of commerce, not only gives birth to new questions, but materially modifies established doctrines.”

The U.C.C. is the principal source of law for specialized commercial transactions, adopted fully in every state but Louisiana. 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.

Article 2 of the U.C.C. governs contracts for the sale of physical goods. 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. 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. \textit{Id.} at vi.

61. \textit{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, \textit{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. \textit{See} U.C.C. § 1-103(a) (AM. LAW INST. & UNIF. LAW COMM’N 2001) (stating the purposes of the U.C.C.).

65. \textit{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. \textit{Id.} § 2-301.
information such as disk and tape drives and input and output devices such as printers and terminals). However, “existing U.C.C. Article 2 does not apply to licenses of software and other information . . . .” 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.

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. 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. 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, supra 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.
makes it unlikely that the average consumers can understand
issues such as roof deformation, cylinder head gasket failures,
occupant restraint defects, seatback failures, fuel-integrity
systems, or window motor regulator failures.  

Strict products liability evolved to address the problem of dangerously defective
cars with latent defects.  

“In less than a half century, the software industry has evolved
into a multi-billion dollar industry.” Today, software shapes
nearly every aspect of the American experience, while delivering
the infrastructure for “modern devices, such as PCs, smartphones,
tables and navigation systems that we have come to rely on so
heavily in our everyday lives.” The U.C.C., however, has not been
updated for seven decades.  

The most recent revisions to U.C.C. Article 2 were completed in the early 1950s, decades before the rise
of the software industry.  

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.” Article 2 does not fit the commercial
realities of software licensing and SaaS.

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

73. For example, beginning in “the early 1970s, in the so-called

74. Software: Statistics and Market Data on Software, Statista,
https://www.statista.com/markets/418/topic/484/software/ (last visited Apr. 3,

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.
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.
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

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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).
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.\textsuperscript{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.\textsuperscript{98} If the contract is predominantly for services and only incidentally for goods, the court will apply the common law of services.\textsuperscript{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.’”\textsuperscript{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.\textsuperscript{101}

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

\begin{footnotesize}
\begin{enumerate}
\item 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))).
\item 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).
\item 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 predominately one of goods).
\item Triangle Underwriters, Inc. v. Honeywell, Inc., 604 F.2d 737, 742–43 (2d Cir. 1979) (citations omitted).
\item 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); \textit{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, \textit{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).
\item Id. at 767.
\end{enumerate}
\end{footnotesize}
rather than for incidental installation or maintenance services.\textsuperscript{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.”\textsuperscript{105} In \textit{Neilson Business Equipment Center v. Monteleone},\textsuperscript{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.\textsuperscript{107}

\textit{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.”\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{111} The “gravamen

\begin{flushleft}
104. \textit{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. \textit{Id.}
106. 524 A.2d 1172 (Del. 1987).
107. \textit{See id.} at 1174–75 (analyzing the hybrid contract under Article 2).
110. \textit{Id.}
111. \textit{See U.C.C.} § 2B-103 (\textit{Am. Law Inst. \\& Unif. Law Comm'n} Sept. 25, 1997)
\end{flushleft}
of the action test” rejected the predominant purpose test when applied to mixed computer contracts. 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.

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. 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.

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.” 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”).


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.\textsuperscript{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).\textsuperscript{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.\textsuperscript{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).\textsuperscript{120} Prior to the late 1980s, courts stretched U.C.C. Article 2 to interpret computer lease agreements.\textsuperscript{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.\textsuperscript{122}

\begin{footnotes}
\item[117] Id.
\item[118] Id.
\item[119] Id.
\item[120] Corinne Cooper, \textit{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).
\item[121] See infra note 122 and accompanying text (noting the necessary inclusion of leases within the Article 2 framework).
\end{footnotes}
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

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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.


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 repossession goods paralleling Article 9’s rights of repossession for a foreclosing secured party).


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

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


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.”).

Articles 2, 2A, and 2B corresponding to sales, leases and licenses, respectively.\textsuperscript{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.\textsuperscript{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.\textsuperscript{137} Thereafter, NCCUSL sponsored UCITA, a stand-alone state statute.\textsuperscript{138} Both


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.

\textsuperscript{136} See infra notes 153, 159 (noting various versions of Article 2B drafts).

\textsuperscript{137} See Rustad, \textit{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”).

\textsuperscript{138} \textit{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{142} Former

\textsuperscript{139} See E-COMMERCE: FINANCIAL PRODUCTS F-5 (Brian W. Smith ed., 2001)

\textsuperscript{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.

\textsuperscript{141} See id. at 3 (noting the “Licensee Benefits” of Article 2B).

\textsuperscript{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.”

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. Article 2B created a right to refund for mass-market licensees, a protection largely applicable in consumer transactions.

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). Article 2B created specialized software warranties including a “warranty for accuracy of non-published informational content.” Article 2B was the first to recognize an “implied system integration warranty” as well as non-infringement warranties for software. 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.” The Article 2B drafters adapted U.C.C. Article 2 rules to the transfers of intangible information. 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**

<table>
<thead>
<tr>
<th>Part of Article 2B</th>
<th>Purpose of Part of Article 2B</th>
<th>Selected Sections</th>
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<p>| 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 |</p>
<table>
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<tr>
<th>Part 5</th>
<th>Transfer of Interests and Rights</th>
<th>Warranty</th>
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<tr>
<td></td>
<td>2B-501, Ownership of Rights and Title to Copies; 2B-502, Transfer of Party’s Interest</td>
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<tr>
<th>Part 6</th>
<th>Performance</th>
<th>Warranty</th>
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<tr>
<th>Part 7</th>
<th>Remedies</th>
<th>Warranty</th>
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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

¹⁵⁴. Id. § 2B-102(a)(17).
¹⁵⁵. Id.
¹⁵⁶. Id. § 2B-102(a)(18).
¹⁵⁷. Id. § 2B-102(a)(35).
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).
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. Similar to Article 2B, UCITA drew in large part from Article 2 in devising defaults for the licensing of information.

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. 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." 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**

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

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).

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.”

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.

In 2002, NCCUSL revised UCITA, allowing for introduction into the states. However, NCCUSL has since withdrawn UCITA after it was enacted in only two states, Maryland and Virginia. 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.

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.

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168. UCITA, supra note 163, § 102(a)(10).
169. Rustad & Onufrio, supra note 12, at 37.
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.”).
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.

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175. See supra note 31 and accompanying text (discussing that Maryland and Virginia were the leaders in adopting UCITA).
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.
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.
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.” Contract formation is subject to limitations based upon public policy, unconscionability, and other invalidating defenses. Neither the Principles nor the UCITA explicitly requires that reasonably accessible terms be readable.

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).” 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.

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, 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:

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 . . . .”).
189. Hillman, supra note 177, at 675 (citing Principles of the Law of Software Contracts, supra note 35, § 1.06 cmt. d.).
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).
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. 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. 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.”

“Software applications did not evolve as a separate industry until the mid-1980’s.” 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.

“If we fast-forward to the second decade of the new millennium, software shapes every aspect of the American experience.” Bloomberg Business Week listed Apple, Google, and Microsoft in their top twenty-five list of most innovative companies. “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.


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.

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

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201. RUSTAD, supra note 197, § 1.02, 18.
202. Id.
205. Id.
206. RUSTAD, supra note 197, § 1.02, 19.
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

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.”).


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.”

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. In mid-1980s, during the formative era of the software industry, courts made the decision to stretch Article 2 to mass-market software. 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.

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.” Software publishers

216. Id. at 37.


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. Zeidenberg223 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 2000225 were also the turning points in applying U.C.C. Article 2 to licenses.226

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.\textsuperscript{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.”\textsuperscript{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.”\textsuperscript{230}

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

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

\textsuperscript{228} See \textit{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?”).
\textsuperscript{229} Id. at 1149.
\textsuperscript{230} Register.com, Inc. v. Verio, Inc., 356 F.3d 393, 403 (2d Cir. 2004).
\textsuperscript{231} 998 P.2d 305 (Wash. 2000).
\textsuperscript{232} See id. at 584 (“\textit{W}e 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 \textit{ProCD} [and] \textit{Hill} . . .”).
\textsuperscript{233} Id. at 571.
\textsuperscript{234} Id.
\textsuperscript{235} Id.
\textsuperscript{236} Id.
Article 2 applied to licensing of software and affirmed the order of summary judgment. The court found the provision limiting, thus, Mortenson's damages to recovery of the purchase price was not unconscionable.

To form a valid contract, “there must be an offer, acceptance, consideration, mutual assent and intent to be bound.” The rise of the Internet spurred the development of standard-form licensing contracts including clickwraps, installwraps, browsewraps, website terms of use, 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. Clickwrap agreements, however, are generally found to be valid and enforceable, because the user’s mouse click constitutes the affirmative manifestation of assent.

237. Id. at 578.
238. Id. at 588.
239. Id.
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] sophisticated economic entities are unlikely to persuade a court that a term is unconscionable.”).
In *i.Lan Sys. v. Netscout Serv. Level Corp.*, the United States District Court in Massachusetts applied Article 2 to uphold a clickwrap agreement. 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. 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.”

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

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.” Rottner first tried the free version, and

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248. See id. at 338.
249. Id.
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
v. Tanzer. Tanzer filed suit because the programming he purchased was unstable and the system could not be debugged in his smart home. 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. 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.

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.” Finally, the court noted the amount paid for goods by Mr. Tanzer far exceeded the amount for services on AVA’s

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263. Id. at 791.
264. Id. at 805.
265. Id. at 800 (emphasis removed).
266. Id. at 803.
The court thus extended U.C.C. Article 2 to a custom software development agreement.\textsuperscript{268}

In \textit{Springbrook Software, Inc. v. Douglas County},\textsuperscript{269} Springbrook Software, Inc. provided “licensed software applications, technology solutions and professional services to local governments, utilities and special districts.”\textsuperscript{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.\textsuperscript{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.”\textsuperscript{272}

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

\textsuperscript{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.

\textsuperscript{268} Whether contracts for smart devices are for goods or services may raise many commercial law issues. See Stacy-Ann Elvy, \textit{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).


\textsuperscript{270} Id. at *4.

\textsuperscript{271} Id. at *1–2.

\textsuperscript{272} Id. at *4.

\textsuperscript{273} Id. at *34.

\textsuperscript{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. 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.”

“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.” 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 blair-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).


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.” Unlike the sale of goods, licensing does not involve the passage of title from the licensor to the licensee.

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. A software license grants a use right to the software or other digital information for a designated period under specified conditions. Similar to leases, the licensing of software validates the legal concept of the right to use property without the passage of title.

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).

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. 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.” Software can be copied at no marginal cost; therefore, licensing is the only efficient method of realizing liquidation value.

Licenses are a specialized contractual form, protecting intellectual property rights to enable vendors to realize their investments in developing code. 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.”

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 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.

“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).” 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. 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.

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.” 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).


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.”

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, which allows the owners of copies of copyrighted works to resell their copies. 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*, the court held Microsoft’s software was not subject to the first sale doctrine because it licensed its products rather than selling them. 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.

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

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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 . . . ”).


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. 1991))).

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.\textsuperscript{303} A buyer could purchase a single copy of software and post the copy on the Internet while charging users for access.\textsuperscript{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.\textsuperscript{305}

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

\begin{itemize}
  \item \textsuperscript{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).
  \item \textsuperscript{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).
  \item \textsuperscript{305} See discussion infra Part III.D.3 (licensing imposes restrictions on software use).
  \item \textsuperscript{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.”).
  \item \textsuperscript{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].
  \item \textsuperscript{308} See discussion supra notes 298–302 and accompanying text.
\end{itemize}
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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{311} For enterprises, royalties are typically based upon such variables as the number of employees or the revenues of the licensee.\textsuperscript{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.\textsuperscript{313} “It has been humorously noted that the difference between open source and proprietary licenses is simple.”\textsuperscript{314}

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\textsuperscript{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).


\textsuperscript{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. \textit{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).

\textsuperscript{312.} Classen, \textit{supra} note 310.


\textsuperscript{314.} See John Tsai, \textit{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.


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.

Apache web server,\textsuperscript{319} the Linux operating system,\textsuperscript{320} the Eclipse development platform,\textsuperscript{321} the scripting language PERL,\textsuperscript{322} and the popular email server Sendmail.\textsuperscript{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.


\textsuperscript{320} See What is Linux?, \textsc{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).


\textsuperscript{322} See About Perl, \textsc{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).

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.\textsuperscript{324}

\textit{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.\textsuperscript{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.\textsuperscript{326}

The widespread adoption of the U.C.C. by state legislatures brought greater uniformity to American commercial law.\textsuperscript{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.\textsuperscript{328} This Article proposes two new Articles that would bring the U.C.C. up to date with the latest technological developments.

\textsuperscript{324} The Open Source Definition, supra note 316.

\textsuperscript{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”).

\textsuperscript{326} See discussion supra note 20.

\textsuperscript{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.).

\textsuperscript{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. 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.

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. Since U.C.C. Article 2 has little relevance to cloud computing, 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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Article 2B: Software Licenses</th>
<th>Article 2C: Cloud Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chief Contracting Type and Parties</strong></td>
<td>License; Licensor, and Licensee</td>
<td>Software-as-a-Service Subscription Agreement; Cloud Provider and Customer</td>
</tr>
<tr>
<td><strong>What is Delivered?</strong></td>
<td>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.</td>
<td>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.”</td>
</tr>
<tr>
<td><strong>Rights Conveyed to Customer</strong></td>
<td>Software publisher grants the licensee the right to use one or more copies of the software under the</td>
<td>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</td>
</tr>
<tr>
<td><strong>end-user license agreement (EULA), while ownership remains with the software publisher.</strong></td>
<td><strong>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.</strong></td>
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</tr>
<tr>
<td><strong>Typically, the licensee cannot assign or otherwise convey the license to any other party without the licensor’s express consent.</strong></td>
<td><strong>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.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Transferability of Rights Granted</strong></td>
<td><strong>What is the Duration of the Agreement?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>A license may be granted for a limited time, or perpetually, depending on the agreement between the licensor and the licensee.</strong></td>
<td><strong>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</strong></td>
<td></td>
</tr>
</tbody>
</table>
from one-time access grants to perpetual access grants.

<table>
<thead>
<tr>
<th>Where Does the Software Reside?</th>
<th>Software applications are downloaded and installed on the customer’s computer system.</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Tenant Model</td>
<td>No sharing of computer resources or software; installed, operated, maintained, and upgraded at the customer’s premises.</td>
<td>“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</td>
</tr>
<tr>
<td>Services on Demand</td>
<td>No concept of elasticity of demand for software licensing.</td>
<td>In some cases, “capabilities can be elastically provisioned and released . . . automatically, to scale rapidly outward and inward commensurate with demand.”334</td>
</tr>
</tbody>
</table>


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*, the court argued that, under the U.C.C., software fits within the definition of a “good.” 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.

Since the *Advent* court’s decision, numerous other courts have stretched U.C.C. Article 2 to software licensing. 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,” another finds “[t]he weight of authority favors application of common law and not the U.C.C. with regard to software licenses.”

335. 925 F.2d 670 (3rd Cir. 1991).
336.  Id. at 676.
337.  Id.
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).
Gap fillers in the U.C.C. are “statutory provisions that apply in the absence of contract disclaimers or provisions covering a particular subject.” 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, 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 and there was no specialized software contracting statute for guidance. 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

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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 (Tralyn 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.
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 SOFTWARE356

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Sales of Goods</th>
<th>Licensing of Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sphere of Application</strong></td>
<td>Tangible Goods</td>
<td>Intangible Assets</td>
</tr>
<tr>
<td><strong>Transfer of Title</strong></td>
<td>Title passes from the seller to the buyer for the</td>
<td>Title never passes from the licensor to the licensee.</td>
</tr>
</tbody>
</table>

351. *Id.*
353. *Id.* § 2-106(1).
354. See discussion *infra* Part III.D.1.
355. See discussion *infra* Part III.D.2.
### Ownership

<table>
<thead>
<tr>
<th>Ownership</th>
<th>Buyer owns what buyer purchases.(^{358})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Software licensee may own a physical or digital copy, but the ownership of the underlying intellectual property rights remains with the licensor.</td>
</tr>
</tbody>
</table>

### Use Restriction After Contract Formation

<table>
<thead>
<tr>
<th>Use Restriction After Contract Formation</th>
<th>Once title passes, typically no location or use restrictions exist in the sale of goods.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

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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.
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. 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.” 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.

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

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”\footnote{362} when it comes to licensing.

The software industry evolved as America’s third largest industry.\footnote{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.\footnote{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.

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

\footnote{363} See Jon M. Garon, \textit{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; \textit{see also} \textit{COMPUTING TECH. INDUS. ASS'N, CYBERSTATES 2018, 7, 13 (2018)}, (analyzing the U.S. technology sector workforce).

\footnote{364} See, \textit{e.g.}, Towle, \textit{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, \textit{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, \textit{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”).}
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. The term intangible “refers to, among other things, intellectual property rights and licenses of information.”

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’être; the physical container is an incidental.” 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. 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., 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.”

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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.”).
369. See Towle, supra note 25, at 532
371. Id. at 698.
Technology, LLC\textsuperscript{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.”\textsuperscript{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.”\textsuperscript{374} In contrast, in a license, the licensor “retains more rights in the subject matter of the license.”\textsuperscript{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.\textsuperscript{376} As such, license

\begin{footnotesize}
\begin{enumerate}
\item Id. at *9.
\item NIMMER, supra note 290, at 3.
\item Id.
\end{enumerate}
\end{footnotesize}

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).
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).
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).
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.
appropriately balance the rights and remedies of licensors and licensees. 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.

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. 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. The software warranties provisions of UCITA are an advance over Article 2B because the provisions in UCITA accommodate the exigencies of licensing.

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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).


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).


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.\textsuperscript{403}

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

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


\textsuperscript{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).

\textsuperscript{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.

\textsuperscript{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.\footnote{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.\footnote{408}


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.\footnote{409} In the event of breach, the proposed Article 2B will not allow for the enforcement of license agreements disclaiming all remedies.


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); Nguyễn 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).


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.  

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.

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.”

The Principles’ warranty provision, on the other hand, states that software companies must disclose known defects in the products they are selling. 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. Increasingly, courts and commentators are commenting on the lack of cohesion between Article 2 sales and the licensing of software. 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

<table>
<thead>
<tr>
<th>Parts of U.C.C. 2B</th>
<th>Purpose of Provision</th>
</tr>
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</table>

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).
<table>
<thead>
<tr>
<th>Part I: General Provisions</th>
<th>2B-101 (Short Title); 2B-102 (Definitions); 2B-103 (Scope); 2C-104 (Choice of Law); 2C-105 (Choice of Forum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part II: Formation</td>
<td>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)</td>
</tr>
<tr>
<td>Part III: Warranties</td>
<td>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)</td>
</tr>
<tr>
<td>Part IV: Performance</td>
<td>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)</td>
</tr>
<tr>
<td>Part V: Term &amp; Termination</td>
<td>2B-501 (Defining Terms); 2B-502 (Notice of Termination); 2B-503 (Survival of Obligations)</td>
</tr>
<tr>
<td>Part VI: Remedies</td>
<td>2B-601 (Overview of Customer’s Remedies); 2B-602 (Overview of Provider’s Remedies); 2B-603 (Damages); 2B-604 (Performance Remedies)</td>
</tr>
</tbody>
</table>
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. 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. SLAs clarify response and resolution in the event that service is interrupted or data is lost. 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.

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


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. 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. 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. 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.


database of state and federal courts reveals while 229 courts either have mentioned the term SaaS or cloud computing, 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.

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.” 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.” SaaS allows the user “to access software and other fundamental computing resources located on remote computer networks operated by third parties.” “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).” SaaS offers “massively scalable IT-enabled capabilities

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.


431. Aaron Elmore et. al., Who’s Driving This Cloud? Towards Efficient
delivered ‘as a service’ to external customers using Internet technologies.”

In the past decade, cloud computing has evolved alongside licensing as the leading computer contracting form. In the past five years, the move toward SaaS is growing exponentially because of its economy of scale, geographic distribution, and lower costs. “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.”

Cloud computing is an alternative delivery system based on either a “hosted application model or a software-on-demand model,” 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.

Cloud computing is “one of the most significant technical advances for global business in this decade—as important as PCs were to the 1970s.”


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


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

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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


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

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. SaaS delivers files through a hosted web portal allowing customers the ability to not invest in file transfer infrastructure. Users access software over the Internet using a standard web browser.

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.” Cloud computing signifies “on-demand delivery of IT


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. 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.


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

resources via the Internet with pay-as-you-go pricing.”

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.

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. Cloud computing is provided through a number of service models, including SaaS, PaaS, and IaaS. 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. This list of services is not exhaustive. For example, XaaS is a hybrid combine that blends SaaS, IAAS, and PaaS. These users access Google


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.”\footnote{Premier Netcomm Solutions, LLC v. Dir., Div. of Taxation, 2016 N.J. Tax Unpub. LEXIS 50 (Tax Ct. of N.J. Oct. 25, 2016).} Similarly, “IaaS sales and services are not taxable.”\footnote{Id.} These IaaS sales include separately stated charges for “servicing or repairing software or hardware.”\footnote{Id.}

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.”\footnote{MELL & GRANCE, supra note 458, at 2.} 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.\footnote{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).} As a result of its apparent advantages, SaaS is “presently growing 6.5 times as fast as the world economy.”\footnote{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-719h4 (last visited Apr. 3, 2019) (on file with the Washington and Lee Law Review).}

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


\footnote{Id.}
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,


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


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. The above-mentioned examples are classified as such because they enable many customers to share a large pool of storage and common computing resources. The vast majority of consumers use cloud computing when they access or store emails no longer being stored on their own hard drive.

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. 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). Cloud computing has differentiated into diverse offerings.

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

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. 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. 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. Similar to gas and water services, cloud computing services are delivered as utility services. Under the predominant purpose test, the court

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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. SaaS does not involve selling goods, rather, SaaS deals with rendering services. 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. 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**

<table>
<thead>
<tr>
<th>Essential Characteristic of Cloud Computing</th>
<th>U.C.C. Article 2</th>
<th>Software as a Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sphere of Application</strong></td>
<td>Tangible Goods</td>
<td>Services</td>
</tr>
<tr>
<td><strong>Transfer of Title</strong></td>
<td>Title passes from the seller to the buyer for the contract price.</td>
<td>As no goods are involved typically, there is no passing of title between the parties.</td>
</tr>
<tr>
<td><strong>Ownership</strong></td>
<td>Buyer owns what buyer purchases.</td>
<td>Service provider remains the owner of all hardware,</td>
</tr>
</tbody>
</table>


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
<table>
<thead>
<tr>
<th><strong>Method of Delivery</strong></th>
<th>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]</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is Delivered</strong></td>
<td>Computer systems are physically delivered and the default place for delivery is the seller’s place of business.[^494]</td>
<td>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).</td>
</tr>
<tr>
<td><strong>Shared Resources</strong></td>
<td>Article 2 has no equivalent of</td>
<td>Resource Pooling: The provider’s</td>
</tr>
</tbody>
</table>

[^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.\textsuperscript{495} Article 2 does not recognize access contracts that are relational like SaaS.

| 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, |

\textsuperscript{495} Id. § 2-507 (outlining the effect of the seller’s tender).
| **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 |  

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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).
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.” SaaS is a model for providing on-demand access to resources, regardless as to whether these resources are networks, storage, applications, or services. For businesses, the benefits of cloud computing are cost savings, improved business agility, and improved responsiveness. 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.

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

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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.”)*


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. Since SaaS is an access contract, there is no software to install.

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. In cloud computing, the customer enters into an access agreement for the allotted time the customer may use the provider’s service.

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. U.C.C. Article 2 applies to sales and has no relevance to hosted services. Article 2 is disconnected to subscription service provider agreements.

The typical SaaS agreement specifies what services will be provided to customers and these services are contracted on a subscription basis. These subscriptions are not “sold.” SaaS agreements will typically specify services and deliverables subject to acceptance testing. 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).
509. Id.
510. Id.
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;\textsuperscript{516} however, these updates are not addressed by any U.C.C. provision. Article 2 warranties address affirmations of fact about the goods,\textsuperscript{517} their merchantability,\textsuperscript{518} and fitness for a particular purpose.\textsuperscript{519} None of these warranties extends to subscription agreements.\textsuperscript{520} SaaS subscription agreements adopt the common law of services as the measure of delivered services.\textsuperscript{521} In \textit{Analytical Graphics, Inc. v. United States},\textsuperscript{522} the court explained that under a subscription service, customers do not receive a copy because:

\textit{[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.}\textsuperscript{523}

Under Article 2, a seller’s primary obligation is to tender conforming goods to the buyer.\textsuperscript{524} “\textquote{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.”}\textsuperscript{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.\textsuperscript{526} SaaS examples include “apps like Salesforce’s Sales

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\textsuperscript{516} For an example of support service provisions, see \textit{id.} § 8.12[3], 1009.

\textsuperscript{517} \textit{See} U.C.C. § 2-313 (A M. LAW. INST. & UNIF. LAW COMM’N 2018) (defining express warranties).

\textsuperscript{518} \textit{See id.} § 2-314 (defining the implied warranty of merchantability).

\textsuperscript{519} \textit{See id.} § 2-315 (defining the warranty of fitness for a particular purpose).

\textsuperscript{520} \textit{See id.} §§ 2-313–2-315 (defining various warranties without describing subscription agreements).

\textsuperscript{521} \textit{See discussion supra} notes 95–101 and accompanying text.


\textsuperscript{523} \textit{Id.} at 382.

\textsuperscript{524} \textit{See} U.C.C. § 2-501 (A M. LAW. INST. & UNIF. LAW COMM’N 2018) (describing the duty of a seller during a transaction).

\textsuperscript{525} \textit{Id.}

\textsuperscript{526} \textit{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.”

E. Key Terms in Cloud Contracts

Cloud contracts, particularly for corporate customers, generally consist of MSAs and SLAs. 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. SLAs, on the other hand, are agreements to establish the performance level of a service. 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.”

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


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.”).


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

In some cases, a business’ day-to-day operations depend upon cloud services. In practice, a business may be using cloud services for a variety of purposes, ranging from simply storing employee or client data, to accounting. 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.

A cloud contract is a services contract where there is no statutory guidance or well-established industry standards setting forth best practices. No court has determined whether SaaS providers have a duty to maintain adequate disaster protection. 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).
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

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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).

server or database, data migration, business continuity/disaster recovery, retention and core security controls.”

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.” In some cases, the service credit “is simply window dressing,” rather than “a meaningful economic remedy that would deter the vendor from breaching the SLA,” with the law offering no protection to consumers and business users alike.

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.

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. 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. “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.” State unfair and deceptive trade practices likely extend to B2C contracts where the provider uses service

546. Id.
548. Id.
549. Id.
550. Id.
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.”).
557. King & Raja, supra note 438, at 418.
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.\footnote{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).}

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.”\footnote{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].} Customers also express dissatisfaction with SLA provisions on security.\footnote{563 See generally Gartner Research Report, Cloud Contracts Need Security Levels to Better Manage Risk (Mar. 13, 2013).} SLAs often reallocate the risk of service interruption, security breaches and other lapses in service to customers.\footnote{564 See Commission Report on Cloud Computing Contracts, supra note 20, at 24 (noting potential abuses in SLAs).}

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.”\footnote{565 Unleashing the Potential of Cloud Computing in Europe, supra note 562, at 11.} Article 2C of the U.C.C. will fill the existing legal void through the creation of a cloud computing roadmap of default terms.\footnote{566 See Commission Report on Cloud Computing Contracts, supra note 20, at 9–12 (detailing the deficiencies in current cloud contract law).} 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.\footnote{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, data transfer, and data hosting; and


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.”)


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. 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.

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. 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.

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, provide a reference architecture, and set

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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.”).


577. Id.
forth the standards for cloud computing SLAs in 2016, 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.

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.
fleshed out to develop default terms to ensure these terms are not tilted in favor of cloud providers. For example, liquidated damages clauses should only be enforceable where they do not have a penal effect.

This law reform project has the potential of updating computer contract law while bringing greater certainty to the access contracts constituting SaaS. 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. If enacted, Article 2C will provide uniform legal rules for the largest sector of computer contracts. 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

<table>
<thead>
<tr>
<th>Parts of U.C.C. 2C</th>
<th>Purpose of Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part I: General Provisions</td>
<td>2C-101 (Short Title); 2C-102 (Definitions); 2C-103, (Scope); 2C-104 (Choice of Law); 2C-105 (Choice</td>
</tr>
</tbody>
</table>

580. See Trappler, *supra* note 538 (noting that, currently, “[a] cloud computing provider’s standard contract is typically written to favor that company”).


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.
### Part II: Formation and Construction of the SaaS Agreement

<table>
<thead>
<tr>
<th>Section</th>
<th>Relevant Code Sections</th>
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<tbody>
<tr>
<td></td>
<td>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)</td>
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### Part III: Service Representations

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<th>Section</th>
<th>Relevant Code Sections</th>
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<tbody>
<tr>
<td></td>
<td>2C-301 (Warranty of Authority); 2C-302 (Warranty of Noninfringement); 2C-303 (Express Warranties of Service Level Obligations); 2C-304 (Implied Quality of Service Level Obligations); 2C-305 (Services Fit for a Particular Purpose); 2C-306 (Disclaimers and Modifications of Service Warranties)</td>
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### Part IV: Performance of the SaaS Agreement

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<th>Section</th>
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<tr>
<td></td>
<td>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)</td>
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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.
<table>
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<tr>
<th>Part V: Security &amp; Privacy</th>
<th>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)</th>
</tr>
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<tbody>
<tr>
<td>Part VI: Cloud Service Provider’s Duties</td>
<td>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)</td>
</tr>
<tr>
<td>Part VII: Cloud Service Customer’s Rights (CSC)</td>
<td>2C-701 (Right of Data Accessibility, Processing &amp; Ownership); 2C-702 (Right to Audit Provider’s Logs); 2C-703 (Right of Data Portability, Protection Against Vendor Lock-in)</td>
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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.


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 (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. 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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{596} While Article 2 does not mesh well with licensing, it has even less relevance to SaaS.\textsuperscript{597}

Software licensing and SaaS transactions differ substantively from sale and lease transactions.\textsuperscript{598} Licenses involve granting a right to use a software application, as opposed to selling software in the manner a tangible good is sold.\textsuperscript{599} SaaS providers operate vendor software, rather than legacy systems, where software is installed on the customer’s premises.\textsuperscript{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.\textsuperscript{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.\textsuperscript{602}


\textsuperscript{596} See supra Part IV.D (discussing the interplay between cloud contracts and the U.C.C.).

\textsuperscript{597} See id. (noting how SaaS contracts are not properly covered by the U.C.C.).

\textsuperscript{598} See id. (noting the peculiarities of SaaS contracts).

\textsuperscript{599} See id. (explaining an unusual feature of SaaS contracts).

\textsuperscript{600} See \textit{What is SaaS?}, supra note 501 (providing a brief overview of SaaS services).

\textsuperscript{601} See supra part IV.D (explaining why Article 2 does not accurately deal with SaaS contracts).

\textsuperscript{602} See David M. Steingold, \textit{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. 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. 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.


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).