Recent Developments in Electronic Commerce ("E-Commerce") Law
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I.   WHAT IS E-COMMERCE?

A.   A Workable Definition. While electronic commerce was defined as recently as 1996 as "[t]ransacting business via electronic means,"[1] today the phrase is commonly understood to have a narrower meaning. In 2000, electronic commerce (or more succinctly, "e-commerce") was defined, "[b]roadly, [as] the buying and selling of goods and services on the Internet."[2] While questions can be raised about the scope of this definition — Is selling or otherwise exchanging information on the Internet itself a form of e-commerce? What about a currency swap that is agreed to after an exchange of conversion ratio information? — it provides a workable introductory framework for understanding e-commerce.

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[1]   D. Lambert, "Glossary of Terms,"
http://pages.prodigy.com/edibooks/edigloss.html#EC (1996).

[2]   S. Geer, Pocket Internet, p. 83 (2000).

B. **Historical Antecedents**. A host of other forms of commercial interchange could be identified as antecedents of e-commerce: telegraphs, telephones, teletypes, and fax machines are all telecommunications devices that have been used to facilitate commercial transactions.[3] In addition, electronic data interchange ("EDI") is a means for the electronic exchange of data related to business transactions. Since 1979, the Accredited Standards Committee ("ASC") X12 has developed more than 275 transaction sets for conducting business electronically.[4] In contrast to commerce transacted through the use of telegraphs or fax machines, or through EDI, our focus will be primarily on transactions taking place on the Internet and, more particularly, on the world wide web ("www" or simply the "web").

C. **Contemporary Examples**. There are many present-day examples of e-commerce. Perhaps the best known is Amazon.com, Inc. (www.amazon.com). Amazon is one of the world's preeminent "business-to-consumer" ("B2C") sites. The EARTH'S BIGGEST BOOKSTORE®[5] and Jeff Bezos, its CEO and founder, have been icons of both the explosive rise and the precipitous fall of stock valuations of e-commerce companies. Amazon has expanded far beyond books, now selling everything from CD's

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[3]   See R.A. Horning, "The Enforceability of Contracts Negotiated in Cyberspace," 5 Int'l J. of Law and Information Tech. 109, reprinted in Cyberspace Law   School '01 503 (2001) for a discussion of issues regarding the formation and enforcement of contracts that refers to precedents dealing with earlier technologies.

[4]   See "What is ASC X12?," http://www.x12.org/x12org/about/index.html?whatis.html.

[5]   No. 2176491, registered July 28, 1998. See http://tess.uspto.gov.

to video cameras. The pervasive appeal of Amazon's approach to consumer-oriented

e-commerce is reflected in its new business: running web sites for other retailers.

> In a deal similar to the agreement reached by its sibling, Toys "R" Us, Babies "R"
> Us will sell its inventory of thousands of baby products on a site operated by
> Amazon.com. Amazon will have responsibility for filling orders and accepting
> returns and is adding features like a one-click purchasing tool.[6]

Founded in 1995, a year after Amazon, the on-line auction house eBay Inc.

(www.ebay.com) has demonstrated another way in which e-commerce can flourish.

While Amazon has continued to amass losses, eBay has made money by allowing

consumers to offer fellow consumers their prized (or formerly prized) possessions. On

eBay and its global sites, ranging from eBay New Zealand to eBay Switzerland, people

throughout the world are able to bid upon, buy, and sell everything from a "Tibetan

Antiqu [*sic*] Prayer Table"[7] to "Tiger Woods Wheaties Boxes Never Opened."[8] In this

regard, eBay is an example of a "consumer-to-consumer" ("C2C") (or perhaps, more

accurately, a "consumer-to-business-to-consumer" ("C2B2C")) site.

In contrast to Amazon and eBay, many observers believe that the real economic

significance of e-commerce will be based upon business-to-business ("B2B")

transactions, including company to company exchanges and industry-wide marketplaces.

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[6]   M. Slatalla, "Online Shopper: When Familiarity Breeds Temptation," New York
        Times, http://www.nytimes.com/2001/04/19/technology/19SHOP.html (April 19,
        2001).

[7]   http://cgi.ebay.com/aw-cgi/eBayISAPI.dll?ViewItem&item=1425363261

[8]   http://cgi.ebay.com/aw-cgi/eBayISAPI.dll?ViewItem&item=1134393909

In terms of dollars, Gartner predicts the global B2B market will be worth $7.3 trillion, or 7 percent of the total global economy, by 2004. The largest single portion—40 percent—will be the $2.7 trillion of goods and services transacted through e-marketplaces. The rest will be through other e-commerce pursuits of individual companies, such as Internet EDI, extranets, and Web storefronts.[9]

Commerce One, Inc. (www.commerceone.com), Ariba, Inc. (www.ariba.com), and Agile Software Corporation (www.agilesoft.com) are among the companies providing B2B infrastructure software.[10] Agile Buyer™ from Agile is an example of the type of software that can be used to facilitate B2B e-commerce. It allows a user, such as a company building an electronic device, to work with its suppliers to facilitate procurement of components by sharing price, inventory, and other information. By exchanging information over the Internet, a company can evaluate competing bids quickly and identify the best suppliers for different components.

D. **Future Possibilities**. The web has been with us only a short while. The TCP/IP protocol that provides the foundation for web traffic was not adopted by the Advanced Research Project Agency ("ARPA") of the U.S. Department of Defense until 1983; the first graphical web browser, Mosaic, was not released until 1993.[11] E-commerce may evolve in radically different directions by 2003, let alone 2033. There are

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[9] R. Memishi, "B2B Exchanges Survival Guide," Internet World Magazine (January 1, 2001), http://www.internetworld.com/010101/01.01.01feature1.jsp.

[10] Russo & Hale LLP (www.computerlaw.com) has represented Agile Software Corporation.

[11] See S. Greer, supra, at 8-9. For a detailed examination of how the Internet came into being, see K. Hafner and M. Lyon, Where Wizards Stay Up Late: The Origins of the Internet (1996).

at least five different axes along which e-commerce's evolution might be measured; these can be labeled as **participation**, **content**, **modality**, **specificity**, and **augmentation**.

Participation specifies the numbers of people and firms throughout the world that are involved in e-commerce. As access to the Internet spreads, and as people and firms become more accustomed to purchasing goods and services on the Internet, participation will increase. Just how rapidly participation increases is a question whose answer will likely determine whether staggering amounts of venture capital turn out to have been wisely invested or mistakenly squandered.

Content describes the types of things that may be bought and sold in e-commerce transactions. With some limited exceptions (babies and body parts, among others), there appear to be very few consumer goods that cannot be auctioned on eBay. Services are another matter. Many consumer services are offered locally by small firms. As participation grows, content increases, modalities multiply, and transaction costs should fall; in addition, choices should increase and local consumer services may become more available through e-commerce. (Yes, babysitter.com has been registered already.)

As businesses strive to lower overhead costs further and become increasingly virtual enterprises, more and more specialized business services may become negotiated through e-commerce transactions. Firms seeking services may be offered both choices between a greater number of service providers and also choices among a greater range of services with a much greater granularity of service offerings. A semiconductor manufacturer may seek out an electrical engineer who has had a minimum of two years' experience designing I/O circuits for IEEE 1394 chips. Whereas consumer e-commerce

services may become more locally focused, business e-commerce services may permeate the globe, reaching firms and individuals from Helsinki to Bangalore.

Modality refers to the technological devices that allow one to participate in e-commerce transactions. At the present time, many, if not most, users engage in e-commerce through networked desktop or other computers. However, one can also use PDA's, cell phones, and other handheld devices to gain access to the Internet. As wireless devices and voice-recognition software become more pervasive, voice-based technologies may become a progressively more important means by which e-commerce is transacted. The billboards that scream for attention on the 101 freeway may be supplemented by intelligent, wireless voicegrams that herald new low prices on Big Mac's or bark out offers for specials on lattes at the Starbucks located just two blocks from the next exit.

Specificity refers to the degree to which an e-commerce transaction satisfies the particular needs of a given individual or firm. In the case of the semiconductor manufacturer described above, a high degree of specificity would be achieved, but specificity can be pursued even further. Consumers are accustomed to purchasing mass-produced goods, but as manufacturing techniques and intelligent design processes improve, even cars may become totally customized for particular individuals. The doors for one person's Toyota Prius hybrid gas/electric automobile may be larger, and the seat backs higher, than for another person. With greater specificity, the information necessary to effect an e-commerce transaction will increase dramatically.

Augmentation describes the degree to which an e-commerce transaction is negotiated with the assistance of a computer.[12] When computer assistance is low for both the seller and the buyer, the entire system is acting primarily as a communications conduit: the buyer transmits an order to the seller through the Internet in much the same way as the buyer might have sent an order to the seller via fax or over the telephone. With increasing computer assistance, (a) the seller's system might be able to check inventories, re-compute prices to take account of sales or other special offers, and even pro-actively suggest goods or services that might appeal to the buyer, while (b) the buyer's system might be able to seek out competitive bids from different sellers, identify alternative goods or services that might be equally satisfactory to the buyer, and perhaps even negotiate prices or delivery terms.

The augmentation continuum extends --- in two different dimensions, i.e., for both seller and buyer --- from zero to virtually infinite machine assistance. Simplifying this, we can consider four cases in which the seller and the buyer have relatively low or relatively high assistance from a computer in negotiating an e-commerce transaction; these alternatives can be roughly categorized in a two-by-two matrix as follows:

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[12] Douglas C. Engelbart articulated the concept of "human augmentation." See, e.g., D. C. Engelbart and W. K. English, "A Research Center for Augmenting Human Intellect," AFIPS Conference Proceedings of the 1968 Fall Joint Computer Conference, San Francisco, CA, December 1968, Vol. 33, pp. 395-410, http://www.histech.rwth-aachen.de/www/quellen/engelbart/ ResearchCenter1968.html. Human augmentation should be contrasted with artificial intelligence.

	Seller: Low Computer Negotiating Assistance	Seller: High Computer Negotiating Assistance
Buyer: Low Computer Negotiating Assistance	"Mom and Pop" Web storefront (simple order form transmitted through the web and is processed manually)	Simple Amazon transaction
Buyer: High Computer Negotiating Assistance	Buyer compares offers through MySimon.com and then places order with "Mom and Pop" Web storefront	Buyer's program stock trading system automatically places order with automated brokerage system

Program stock trading systems that automatically analyze, respond to, and place orders based upon changes in market conditions may represent one of the extremes of computer negotiating assistance today. With future advances in computer technology, we can envision buyers' and sellers' computer "agents" becoming even more sophisticated and progressively more autonomous. In some instances, transactions may be negotiated entirely between autonomous computer agents.

Therefore, as participation grows, content expands, modalities proliferate, specificity increases, and augmentation develops, e-commerce law is likely become increasingly important. In the future, some of the most important questions that e-commerce law must address are what are the precise circumstances under which transactions negotiated between such computer agents will be enforceable and to what degree.

II.   SELECTED STATUTES REGARDING DIGITAL SIGNATURES.

    A.   **<u>Overview</u>**. Both in anticipation of and in response to developments in e-commerce technology, Congress and the California legislature have promulgated new legislation. Much of this legislation has been aimed at establishing standards for evaluating the legitimacy of e-commerce transactions, electronic signatures ("<u>e-signatures</u>") and electronic records ("<u>e-records</u>").

    B.   **<u>California Uniform Electronic Transaction Act</u>**.

    1.   **<u>Introduction</u>**. In 1999, California adopted the Uniform Electronic Transactions Act, Cal. Civ. C. §§ 1633.1-1633.17 (the "<u>California UETA</u>"). This statute was based upon a model act ("<u>UETA</u>") completed by the National Conference of Commissioners on Uniform State Laws ("<u>NCCUSL</u>") in that year.[13] According to the NCCUSL, (a) "[t]he primary objective of this [model] act is to establish the legal equivalence of electronic records and signatures with paper writings and manually-signed signatures, removing barriers to electronic commerce," (b) the model act has been adopted in 29 states (sometimes with modifications), and (c) in 2001, the model act has been introduced in 15 other states, the District of Columbia, and the U.S. Virgin Islands.[14] Although the California UETA is consistent with the primary objective of the model act as articulated by the NCCUSL, the California UETA differs from the model act in several important respects**.**

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[13]   The model act, with prefatory note and comments, can be found at http://www.law.upenn.edu/bll/ulc/fnact99/1990s/ueta99.htm.

[14]   http://www.nccusl.org/uniformact_factsheets/uniformacts-fs-ueta.htm

2. **Key Provisions of the California UETA**.[15] The California UETA

does not require that a transaction be conducted electronically. Cal. Civ. C. § 1633.5(a)

provides that "[t]his title does not require a record or signature to be created, generated,

sent, communicated, received, stored, or otherwise processed or used by electronic means

or in electronic form." Instead, the California UETA creates a set of rules that apply if

parties voluntarily elect to transact their business electronically: "This title applies only to

a transaction between parties each of which has agreed to conduct the transaction by

electronic means." Cal. Civ. C. § 1633.5(b). The statute suggests that if there is a

disagreement as to whether the parties agreed to conduct the transaction electronically, a

court or other tribunal will be able to draw upon a broad range of evidence to ascertain

what the parties elected: "Whether the parties agree to conduct a transaction by electronic

means is determined from the context and surrounding circumstances, including the

parties' conduct." Ibid.

If the parties have agreed to conduct a transaction electronically, then the core

provisions of the California UETA operate to make their agreement enforceable. These

are spelled out in the four subsections of Cal. Civ. C. § 1633.7:

> (a) A record or signature may not be denied legal effect or enforceability solely because it is in electronic form.
>
> (b) A contract may not be denied legal effect or enforceability solely because an electronic record was used in its formation.
>
> (c) If a law requires a record to be in writing, an electronic record satisfies the law.

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[15]   This is not an exhaustive description of the California UETA. There are numerous other provisions of this statute that are not discussed in this overview.

(d) If a law requires a signature, an electronic signature satisfies the law.

Other parts of the California UETA provide support for this basic conceptual framework. The California UETA does not require or prohibit the use of any particular digital signature technology, e.g., it does not demand that a digital signature be effected using public key encryption ("PKE") techniques. Instead, the California UETA specifies rules of attribution, beginning with the principle that "[a]n electronic record or electronic signature is attributable to a person if it was the act of the person." Cal. Civ. C. § 1633.9(a). In addition, Cal. Civ. C. § 1633.10 describes rules that apply if "a change or error in an electronic record occurs in a transmission between parties to a transaction...."

The California UETA also offers a set of rules that validate many existing Internet transactions and that may provide a foundation for much more sophisticated e-commerce transactions in the future. Cal. Civ. C. § 1633.14 provides rules for "automated transactions" (which are defined in Cal. Civ. C. § 1633.2(b)):

(a) In an automated transaction, the following rules apply:

(1) A contract may be formed by the interaction of electronic agents of the parties, even if no individual was aware of or reviewed the electronic agents' actions or the resulting terms and agreements.

(2) A contract may be formed by the interaction of an electronic agent and an individual, acting on the individual's own behalf or for another person, including by an interaction in which the individual performs actions that the individual is free to refuse to perform and which the individual knows or has reason to know will cause the electronic agent to complete the transaction or performance.

(b) The terms of the contract are determined by the substantive law applicable to it.

Section 14 of the model act, upon which Cal. Civ. C. § 1633.14(a) was based, was

intended to address some of the epistemological problems of e-commerce:

> This section confirms that contracts can be formed by machines functioning as electronic agents for parties to a transaction. It negates any claim that lack of human intent, at the time of contract formation, prevents contract formation. When machines are involved, the requisite intention flows from the programing and use of the machine.[16]

Nonetheless, the California UETA does not eliminate all California legal

requirements for memorializing transactions on paper and signing documents by hand.

There are numerous limitations on the application of the California UETA. It does not

apply to transactions that are subject to: (1) "[a] law governing the creation and execution

of wills, codicils, or testamentary trusts"; (2) "Division 1... of the Uniform Commercial

Code, except Sections 1107 and 1206"; (3) "Divisions 3..., 4..., 5..., 8..., 9..., and 11... of

the Uniform Commercial Code"; or (4) "A law that requires that specifically identifiable

text or disclosures in a record or a portion of a record be separately signed, including

initialed, from the record. However, this paragraph does not apply to Section 1677 or

1678 of this code or Section 1298 of the Code of Civil Procedure." Cal. Civ. C. §

1633.3(b). In addition, the California UETA does not apply to a host of specific

transactions described in various other enumerated California statutes. Cal. Civ. C. §

1633.3(c). It is very important to note, however, that the status of at least some of these

exceptions (a) has been called into question by the enactment of the E-Sign Act

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[16]   Comment 1 to Section 14 of the model act; <u>see</u> http://www.law.upenn.edu/bll/ulc/fnact99/1990s/ueta99.htm.

(discussed below) and (b) may change, depending on whether S.B. 97 (discussed below) becomes law.

3. **Differences Between the California UETA and the Model Act**.

There are important differences between the California UETA and the model act. Among other things:[17]

a. California incorporated numerous exceptions to the scope of its statute that are not found in the model act (see especially Cal. Civ. C. § 1633.3(c));

b. California imposed special limitations on the means whereby parties might agree to conduct a transaction electronically (see Cal. Civ. C. § 1633.5(b));

c. California's rules for determining when an e-record has been sent and received differ those set forth in the model act (see Cal. Civ. C. § 1633.15); and

d. California has not --- to date --- adopted section 16 of the model act dealing with "transferable records"; these are e-records that "(1) would be a note under [Article 3 of the Uniform Commercial Code] or a document under [Article 7 of the Uniform Commercial Code] if the electronic record were in writing; and (2) the issuer of the electronic record expressly has agreed is a transferable record."[18]

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[17] This is not a complete list of the differences between the California UETA and the model act. There are other differences that are not discussed in this overview.

[18] Section 16 of the model act; see http://www.law.upenn.edu/bll/ulc/fnact99/1990s/ueta99.htm.

4. **Proposed Changes to the California UETA**. State Senator

Byron Sher introduced S.B. 97, "[a]n act to repeal and add Title 2.5 (commencing with

Section 1633.1) of Part 2 of Division 3 of the Civil Code, relating to electronic

transactions," on January 18, 2001. Among other things,[19] S.B. 97 would:

    a.   substantially revise California's exceptions to the scope of its statute

        (compare Cal. Civ. C. § 1633.3 with the proposed revised § 1633.3 in

        S.B. 97); and

    b.   introduce new rules for transferable records (see the proposed revised §

        1633.16 in S.B. 97).

S.B. 97 was referred to the Rules Committee of the California Senate on February 1st, and

as of April 24th, it remained with that committee.[20]

    C.   **Uniform Computer Information Transaction Act**. The Uniform

Computer Information Transactions Act ("UCITA") is another model act that was

completed by the NCCUSL in 1999. UCITA had its roots in the proposed Article 2B of

the U.C.C., but the NCCUSL decided to propose UCITA as a separate model act.[21]

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[19]   This is not a complete list of the changes that S.B. 97 would make in the California UETA. There are other changes that are not discussed in this overview.

[20]   See http://www.assembly.ca.gov/acs/acsframeset2text.htm.

[21]   F. H. Miller and C. C. Ring Jr., "Article 2B's New Uniform: A Free-Standing Computer Information Transactions Act," VBA Journal (July 1999), http://www.vba.org/july99.htm#uniform.

According to the NCCUSL, UCITA:

> provides a comprehensive set of rules for licensing computer information, whether computer software or other clearly identified forms of computer information. <u>Computerized databases and computerized music are other examples of computer information that would be subject to UCITA. It would also govern access contracts to sites containing computer information, whether on or off the Internet. UCITA would also apply to storage devices, such as disks and CD's that exist only to hold computer information.</u> Other kinds of goods which contain computer information as a material part of the subject matter of a transaction may also be made subject to UCITA by express reference in a contract. Otherwise, other law would apply, such as the law of sales or leases for most transactions. UCITA would not govern contracts, even though they may be licensing contracts, for the traditional distribution of movies, books, periodicals, newspapers, or the like.[22]

Whereas UETA has been widely adopted, UCITA's reception has been tepid, at best. According to the NCCUSL, as of April 24th, the model UCITA had only been adopted in two states, Maryland and Virginia, and it had been introduced in only five other states, Arizona, Illinois, Maine, New Jersey, and Texas.[23] Many organizations that oppose UCITA have banded together to form "AFFECT - Americans for Fair Electronic Commerce Transactions" (which managed to gain the www.ucita.com domain name). AFFECT's members include the American Library Association, Sun Microsystems, Inc., Consumer Federation of America, and The Principal Financial Group.[24] Organizations that support UCITA have formed the "Digital Commerce Coalition ('DCC')," and include AOL Time Warner, the Business Software Alliance, Intel, Microsoft, and the

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[22]   http://www.nccusl.org/uniformact_summaries/uniformacts-s-ucita.htm (emphasis added).

[23]   <u>See</u> http://www.nccusl.org/uniformact_factsheets/uniformacts-fs-ucita.htm.

[24]   <u>See</u> http://www.ucita.com/who.html.

National Association of Securities Dealers.[25] As of April 24th, UCITA had not been

introduced in California.[26]

D. **Electronic Securities Transaction Act**. The Electronics Securities

Transactions Act was a bill introduced by Senator Abraham on April 29, 1999 as S.921 in

the 106th Congress. As introduced, it would have:

> Amended] the Securities Exchange Act of 1934 and the Investment Advisers Act of 1940 to permit a registered broker, dealer, transfer agent, or investment adviser, respectively, to: (1) rely upon an electronic signature on any document submitted by a customer or counterpart; and (2) use such signature in the conduct of business with any customer or counterpart.
>
> Stated] such electronic signature shall not be denied legal effect, validity and enforceability solely because it is an electronic signature. [and]
>
> Pre-empted] State law with regard to the use of or reliance on such signature by such registered persons.[27]

Although it was co-sponsored by Senators Lott and McCain, among others, it was simply

referred to the Committee on Banking and has not yet been enacted into law.

E. **Electronic Signatures in Global and National Commerce Act**.

     1. **Introduction**. While the Electronics Securities Transactions Act

languished in the Senate Banking Committee, another bill by Senator Abraham (as

modified by another House bill and action by the Conference Committee) became law on

June 30, 2000, when former President Clinton "used a digital smart card with his dog's

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25   See http://www.ucitayes.org/who/.

26   See http://www.nccusl.org/uniformact_factsheets/uniformacts-fs-ucita.htm.

27   See http://thomas.loc.gov/cgi-bin/bdquery/D?d106:1:./temp /~bd3UY7:@@@L&summ2=m&|/bss/d106query.html|.

name as the corresponding password"[28] (and a pen, as well, to overcome any doubts about self-referential validity) to sign the "Electronic Signatures in Global and National Commerce Act" (the "E-Sign Act"), Pub. L. No. 106-229, 114 Stat. 464 (2000), 15 U.S.C. §§ 7001-7031.[29] The E-Sign Act is particularly important, because (a) it is one of the first federal e-commerce statutes, (b) it has a significant effect on UETA generally, and the California UETA, in particular, and (c) it describes the U.S. position on what may become international standards for determining the validity of e-signatures worldwide.

        2.   **Key Provisions of the E-Sign Act**. There are both significant similarities and very important differences between the E-Sign Act and UETA, particularly the California UETA.

        a. **Generally Does Not Require That Transactions Be Conducted Electronically**. To a great extent, the E-Sign Act does not mandate that transactions be conducted electronically. 15 U.S.C. § 7001 (b) provides that: "[t]his subchapter does not– ... (2) require any person to agree to use or accept electronic records

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28   D. Murphy, "E-Sign Act is Now Law" (6/30/00), http://dgl.com/itinfo/2000/it000630.html.

29   As originally enacted, the E-Sign Act consisted of four titles: (1) "Electronic Records and Signatures in Commerce"; (2) "Transferable Records"; (3) "Promotion of International Electronic Commerce"; and (4) "Commission on Online Child Protection." Pub. L. No. 106-229. The first three titles of the E-Sign Act were codified at 15 U.S.C. §§ 7001-7031; the fourth title can be found as a note to 47 U.S.C. § 231. See U.S.C.A. Tables, Statutes at Large, Pub. L. No. 106-229. This overview will focus primarily on the first title of the E-Sign Act, and it will not discuss the fourth title of the E-Sign Act at all. In addition, several other aspects of the E-Sign Act, including, but not limited to, record retention issues, are not discussed in this overview.

or electronic signatures, other than a governmental agency with respect to a record other than a contract to which it is a party." With the exception of certain obligations imposed upon government agencies, this is in keeping with the spirit of the California UETA. Cf. Cal. Civ. C. § 1633.5(a).

b. <u>Initial Broad Statement of Scope for Core Provisions</u>. On the other hand, the fundamental provisions of the E-Sign Act — those that validate e-signatures, e-contracts, and e-records — are given a very broad range of application. 15 U.S.C. § 7001(a) provides:

> (a) In general
>
> Notwithstanding any statute, regulation, or other rule of law (other than this subchapter and subchapter II of this chapter), with respect to any transaction in or affecting interstate or foreign commerce--
>
> **(1)** a signature, contract, or other record relating to such transaction may not be denied legal effect, validity, or enforceability solely because it is in electronic form; and
>
> **(2)** a contract relating to such transaction may not be denied legal effect, validity, or enforceability solely because an electronic signature or electronic record was used in its formation.

Whereas the California UETA establishes a voluntariness standard to determine the validity of an e-transaction --- "This title applies only to a transaction between parties each of which has agreed to conduct the transaction by electronic means." Cal. Civ. C. § 1633.5(b) --- the E-Sign Act generally confers validity on an electronic "signature,

contract, or other record" relating to "any transaction in or affecting interstate or foreign commerce."[30]

    c. <u>One Can Potentially Opt Out of the E-Sign Act</u>. Immediately after the general statement of scope set forth in 15 U.S.C. § 7001(a) comes 15 U.S.C. § 7001(b), which describes general classes of rights and obligations that are preserved notwithstanding the E-Sign Act:

> (b) Preservation of rights and obligations
>
> <u>This subchapter does not</u>–
>
> **(1)** limit, alter, or otherwise affect any requirement imposed by a statute, regulation, or rule of law relating to the rights and obligations of persons under such statute, regulation, or rule of law other than a requirement that contracts or other records be written, signed, or in nonelectronic form; or
>
> **(2)** <u>require any person to agree to use or accept electronic records or electronic signatures</u>, other than a governmental agency with respect to a record other than a contract to which it is a party.

(Emphasis added.)

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[30] As used in the E-Sign Act, the term "transaction" is itself defined very broadly:

> The term "transaction" means an action or set of actions relating to the conduct of business, consumer, or commercial affairs between two or more persons, including any of the following types of conduct--
>
> **(A)** the sale, lease, exchange, licensing, or other disposition of (i) personal property, including goods and intangibles, (ii) services, and (iii) any combination thereof; and
>
> **(B)** the sale, lease, exchange, or other disposition of any interest in real property, or any combination thereof.

15 U.S.C. § 7006(13).

The proper interpretation of the interaction between 15 U.S.C. § 7001(a)(1) and

15 U.S.C. § 7001(b)(2) is open to debate. Some commentators have concluded that

"[t]he new law does not require that transactions be conducted by electronic means or

consummated by e-signatures; instead, it merely facilitates transactions that parties

choose to conduct electronically."[31] On the other hand, another commentator has

expressed the view that:

> E-Sign does not require any particular conditions to be met in order for its
> electronic contracting provisions to apply. Questions of intent to sign or intent to
> engage in other legal acts are left untouched and continued to be governed by
> other law, whether transactions were conducted electronically or on paper.
> UETA's provisions, on the other hand, only apply if the parties agree to conduct
> transactions electronically.[32]

Can one opt out of E-Sign? The answer is likely, "Yes," if there is an express, mutual

agreement to do so.

There are at least three ways in which 15 U.S.C. § 7001(a)(1) and 15 U.S.C.

 § 7001(b)(2) could be read together. First, § 7001(a)(1) could be given precedence over

§ 7001(b)(2); in other words, when the E-Sign Act says "a signature, contract, or other

record relating to such transaction may not be denied legal effect, validity, or

enforceability solely because it is in electronic form," that is what is meant, and when it

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[31]   M.E. Arruda and I.A. Shestakova, "US Enacts E-Sign: The Electronic Signatures
        in Global and National Commerce Act," 15 Computer Law Association Bulletin
        99 (2000) (footnote omitted).

[32]   M.D. Scott, "UCITA and E-Signature Legislation," in Cyberspace law School '01
        566, 582 (2001) (footnotes omitted). At the beginning of this article, it is noted
        that "[t]he following materials are reprinted with permission from Chapter 6 of
        the new edition of Scott on Computer Law (3d ed. 2001 Aspen Law & Business)."
        Id. at 566.

says "subchapter does not– ... require any person to agree to use or accept electronic records or electronic signatures...," all that means is that the E-Sign Act is not compelling any person to enter into, or attempt to enforce, any contract. This would appear to give far too little weight to § 7001(b)(2). Second, § 7001(b)(2) could be given precedence over § 7001(a)(1); that is to say that the E-Sign Act should be read in much the same way as Cal. Civ. C. § 1633.5(b): "This title applies only to a transaction between parties each of which has agreed to conduct the transaction by electronic means." Cal. Civ. C. § 1633.5(b). That would appear to be equally unsatisfactory, because (a) it makes a mockery of the general statement in § 7001(a)(1) and (b) if Congress had intended that the E-Sign Act be read in the same way as UETA, Congress could have followed the UETA language precisely. A third alternative is to take particular note of the introductory language in § 7001(a) and the express qualification set forth in § 7001(a)(1):

> (a) In general
>
> <u>Notwithstanding any statute, regulation, or other rule of law</u> (other than this subchapter and subchapter II of this chapter), with respect to any transaction in or affecting interstate or foreign commerce--
>
> **(1)** a signature, contract, or other record relating to such transaction may not be denied legal effect, validity, or enforceability <u>solely</u> because it is in electronic form; ....

(Emphasis added.) With this in mind, one may perhaps be able to read § 7001(a)(1) as merely rendering nugatory state and federal statutes that would otherwise require paper documents or ink signatures, while leaving room for transacting parties to agree not to be bound by the E-Sign Act. In other words, while the E-Sign Act might overcome a requirement in a state statute of frauds, it would still leave room for the parties

to a contract to agree between themselves that the contract itself (or an amendment to it) must be written on paper and signed in ink. In that case, a reviewing court might be able to deny "legal effect, validity, or enforceability" to the purported contract if it were never signed, but such a court would not be doing so "<u>solely</u> because it is in electronic form"; instead, the court would be relying upon a specific contractual provision that is in addition to the electronic form of the contract.

Until these issues are resolved by amendments to the E-Sign Act or an authoritative court decision, perhaps the most that can be said is: (1) parties can probably opt out of the E-Sign Act; (2) they will probably only be able to do so if there is an express, mutual agreement to do so; and (3) if there is a dispute between the parties, the E-Sign Act is subject to judicial interpretation. A court deciding such a dispute could presume that e-signatures and e-contracts are valid; it could presume that they are not valid if the parties have expressly and mutually agreed otherwise; or it could decide not to apply any presumption and resolve the dispute on its particular facts. How the first courts to confront these issues resolve them could be very important in terms of the future development of e-commerce law.

d. <u>Specific Exceptions for Consumer Disclosures</u>. Despite the broad general scope of the E-Sign Act, it also establishes rigorous standards that must be met in the case of certain consumer disclosures. Among other things, these standards include specific procedures for determining whether a consumer has consented to receive

information electronically that, pursuant to other laws, must be disclosed to a consumer in writing. 15 U.S.C. § 7001(c) provides, in part:[33]

> (c) Consumer disclosures
>
> (1) Consent to electronic records
>
> Notwithstanding subsection (a), if a statute, regulation, or other rule of law requires that information relating to a transaction or transactions in or affecting interstate or foreign commerce be provided or made available to a consumer in writing, the use of an electronic record to provide or make available (whichever is required) such information satisfies the requirement that such information be in writing if–
>
> **(A)** the consumer has affirmatively consented to such use and has not withdrawn such consent;
>
> **(B)** the consumer, prior to consenting, is provided with a clear and conspicuous statement--
>
> **(i)** informing the consumer of (I) any right or option of the consumer to have the record provided or made available on paper or in nonelectronic form, and (II) the right of the consumer to withdraw the consent to have the record provided or made available in an electronic form and of any conditions, consequences (which may include termination of the parties' relationship), or fees in the event of such withdrawal;

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[33] 15 U.S.C. § 7001(c) contains other subsections, and there are other parts of the E-Sign Act that provide additional protections for consumers that are not discussed in this overview. Among other things, the E-Sign Act also contains a specific provision that:

> (A) Preservation of consumer protections
>
> Nothing in this subchapter affects the content or timing of any disclosure or other record required to be provided or made available to any consumer under any statute, regulation, or other rule of law.

15 U.S.C.A. § 7001(c)(2)(A).

(ii) informing the consumer of whether the consent applies (I) only to the particular transaction which gave rise to the obligation to provide the record, or (II) to identified categories of records that may be provided or made available during the course of the parties' relationship;

(iii) describing the procedures the consumer must use to withdraw consent as provided in clause (i) and to update information needed to contact the consumer electronically; and

(iv) informing the consumer (I) how, after the consent, the consumer may, upon request, obtain a paper copy of an electronic record, and (II) whether any fee will be charged for such copy;

(C) the consumer--

(i) prior to consenting, is provided with a statement of the hardware and software requirements for access to and retention of the electronic records; and

(ii) consents electronically, or confirms his or her consent electronically, in a manner that reasonably demonstrates that the consumer can access information in the electronic form that will be used to provide the information that is the subject of the consent; and

(D) after the consent of a consumer in accordance with subparagraph (A), if a change in the hardware or software requirements needed to access or retain electronic records creates a material risk that the consumer will not be able to access or retain a subsequent electronic record that was the subject of the consent, the person providing the electronic record--

(i) provides the consumer with a statement of (I) the revised hardware and   software requirements for access to and retention of the electronic records, and (II) the right to withdraw consent without the imposition of any fees for such withdrawal and without the imposition of any condition or consequence that was not disclosed under subparagraph (B)(i); and

(ii) again complies with subparagraph (C).

Two commentators have summarized the differences between the scope of UETA and

the E-Sign Act as follows:

Like UETA, E-Sign does not require anyone to use electronic media. However, while UETA contains a very general provision limiting its application to

transactions in which both parties have at least impliedly "agreed" to conduct transactions using electronic media, E-Sign requires that consumers have affirmatively consented before electronic media can be used to satisfy legal requirements to provide information to the consumers in writing. Thus, while UETA imposes a threshold requirement, even in business-to-business electronic commerce, that both parties have agreed - at least by their conduct or as indicated by the context - to use electronic media before existing signature and writing requirements become inapplicable, E-Sign imposes a much more onerous consent requirement but only with respect to transactions with consumers and, even then, only with respect to certain information.

R. A. Wittie and J. K. Winn, "E-Sign of the Times," http://www.kl.com/practiceareas

/technology/pubs/page20.STM (hereinafter "E-Sign of the Times") (footnotes omitted).

          e. <u>Other Classes of Exceptions</u>. In addition to the exceptions for

consumer disclosures described in 15 U.S.C. § 7001(c), the E-Sign Act contains many

other exceptions to its general scope. Among other things, it does not apply to statutes

"governing the creation and execution of wills, codicils, or testamentary trusts," 15

U.S.C. § 7003(a)(1), state laws "governing adoption, divorce, or other matters of family

law," 15 U.S.C. § 7003(a)(2), or "the Uniform Commercial Code, as in effect in any

State, other than sections 1-107 and 1-206 and Articles 2 and 2A," 15 U.S.C. §

7003(a)(3). In addition, 15 U.S.C. § 7003(b) provides that:

> The provisions of section 7001 of this title shall not apply to–
>
> **(1)** court orders or notices, or official court documents (including briefs, pleadings, and other writings) required to be executed in connection with court proceedings;
>
> **(2)** any notice of--
>
> **(A)** the cancellation or termination of utility services (including water, heat, and power);

(B) default, acceleration, repossession, foreclosure, or eviction, or the right to cure, under a credit agreement secured by, or a rental agreement for, a primary residence of an individual;

(C) the cancellation or termination of health insurance or benefits or life insurance benefits (excluding annuities); or

(D) recall of a product, or material failure of a product, that risks endangering health or safety; or

(3) any document required to accompany any transportation or handling of hazardous materials, pesticides, or other toxic or dangerous materials.

> **f. Electronic Agents May Form Contracts**. Like the California

UETA (see Cal. Civ. C. § 1633.14), the E-Sign Act contains a provision that recognizes

the possibility of contracts being formed between electronic agents.

> A contract or other record relating to a transaction in or affecting interstate or foreign commerce may not be denied legal effect, validity, or enforceability solely because its formation, creation, or delivery involved the action of one or more electronic agents so long as the action of any such electronic agent is legally attributable to the person to be bound.

15 U.S.C. § 7001(h).

> **g. Transferable Records**. In contrast to the California UETA, the

E-Sign Act contains specific provisions dealing with transferable records. 15 U.S.C. §

7021(a)(1) provides that:

> The term "transferable record" means an electronic record that--

> **(A)** would be a note under Article 3 of the Uniform Commercial Code if the electronic record were in writing;

> **(B)** the issuer of the electronic record expressly has agreed is a transferable record; and

> **(C)** relates to a loan secured by real property.

15 U.S.C. §§ 7021(b)-(c) specify the conditions under which a person is deemed to have

control over a transferable record with reference to "a system employed for evidencing

the transfer of interests in the transferable record...." 15 U.S.C. § 7021(d) then describes

the rights of a person having control over a transferable record:

> Except as otherwise agreed, a person having control of a transferable record is the holder, as defined in section 1-201(20) of the Uniform Commercial Code, of the transferable record and has the same rights and defenses as a holder of an equivalent record or writing under the Uniform Commercial Code, including, if the applicable statutory requirements under section 3-302(a), 9-308, or revised section 9-330 of the Uniform Commercial Code are satisfied, the rights and defenses of a holder in due course or a purchaser, respectively. Delivery, possession, and endorsement are not required to obtain or exercise any of the rights under this subsection.

> **h. International Issues**. The E-Sign Act goes on to attempt to

promote the acceptance of its terms and principles internationally. Pursuant to 15 U.S.C.

§ 7031(a)(1):

> The Secretary of Commerce shall promote the acceptance and use, on an international basis, of electronic signatures in accordance with the principles specified in paragraph (2) and in a manner consistent with section 7001 of this title. The Secretary of Commerce shall take all actions necessary in a manner consistent with such principles to eliminate or reduce, to the maximum extent possible, the impediments to commerce in electronic signatures, for the purpose of facilitating the development of interstate and foreign commerce.

Among other things, the principles specified in 15 U.S.C. § 7031(a)(2) include the

following: **"(B)** Permit parties to a transaction to determine the appropriate authentication

technologies and implementation models for their transactions, with assurance that those

technologies and implementation models will be recognized and enforced."[34]

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[34]   There is a certain irony in this part of the E-Sign Act, because the act itself (as well as UETA) appears to have roots in the United Nations Commission on

It is not clear whether this approach to promoting uniform international

recognition of certain aspects of e-commerce will be fruitful. "The interoperability of the

Act with a kindred piece of legislation in the EU — the Directive on a community

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International Trade Law ("UNCITRAL") "Model Law on Electronic Commerce
with Guide to Enactment" (which can be found at
http://www.uncitral.org/english/texts/electcom/ml-ecomm.htm).

> The core provisions of E-Sign and UETA are substantially the same and
> are drawn from the 1996 UNCITRAL Model Law on Electronic
> Commerce. These provide that neither a signature nor a writing may be
> denied legal effect solely because it is in electronic form, nor may a
> contract be denied legal effect solely because an electronic signature or
> record was used in its formation.

E-Sign of the Times (footnotes omitted). The antecedents of the UNCITRAL
model law, in turn, appear to go back to at least the mid-1980's. See "Guide to
Enactment of the UNCITRAL Model Law on Electronic Commerce (1996)," ¶¶
123f. (which can be found at http://www.uncitral.org/english/
texts/electcom/ml-ecomm.htm). The U.N. General Assembly was on record as
supporting the expansion of what has become e-commerce as early as 1985:

> 127. That recommendation (hereinafter referred to as the "1985
> UNCITRAL Recommendation") was endorsed by the General Assembly
> in resolution 40/71, paragraph 5(b), of 11 December 1985 as follows:
>
> "The General Assembly,
>
> "... Calls upon Governments and international organizations to take action,
> where appropriate, in conformity with the Commission's recommendation
> so as to ensure legal security in the context of the widest possible use of
> automated data processing in international trade; ...".

Id. at ¶ 127 (footnote omitted).

Framework for Electronic Signatures — is yet to be seen."[35] At least one commentator

has raised doubts about whether international agreement can be achieved easily:

> The European Union (EU) has proposed its own approach toward e-signatures and records — an approach very different from that of the United States. Among other things, the EU, led by Germany, endorses the use of a specific technology — public-key digital signatures. With passage of E-SIGN, the United States emphatically has rejected that approach, instead allowing the parties to each transaction to determine what technology best suits their needs. Indeed, Congress included in E-SIGN an entire title (Title III), lending support to US negotiators who have been pushing for adoption of a technology-neutral approach in the international arena.**[36]**

      3.   **Preemption Issues Under the E-Sign Act**. The E-Sign Act's

provisions are complex. First, as a federal law, within its stated scope — "any transaction

in or affecting interstate or foreign commerce," 15 U.S.C. § 7001(a) — the E-Sign Act

would generally preempt state law. However, certain specific limits on the scope of the

E-Sign Act's preemption are set out in 15 U.S.C. § 7002(a):[37]

> (a) In general

> A State statute, regulation, or other rule of law may modify, limit, or supersede the provisions of section 7001 of this title with respect to State law only if such statute, regulation, or rule of law--

> **(1)** constitutes an enactment or adoption of the Uniform Electronic Transactions Act as approved and recommended for enactment in all the States by the National Conference of Commissioners on Uniform State Laws in 1999, except that any exception to the scope of such Act enacted by a State under section 3(b)(4) of

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[35]   M.E. Arruda and I.A. Shestakova, <u>supra</u>, at 103.

[36]   B. Dayanim, "The Federal Government Broadly Validates the Use of Electronic Signatures and Records," 1 <u>E-Commerce Law</u> 10, 14 (2001).

[37]   Additional details concerning the preemption rules are set forth in 15 U.S.C. § 7002(b)-(c).

such Act shall be preempted to the extent such exception is inconsistent with this subchapter or subchapter II of this chapter, or would not be permitted under paragraph (2)(A)(ii) of this subsection; or

(2)(A) specifies the alternative procedures or requirements for the use or acceptance (or both) of electronic records or electronic signatures to establish the legal effect, validity, or enforceability of contracts or other records, if--

(i) such alternative procedures or requirements are consistent with this subchapter and subchapter II of this chapter; and

(ii) such alternative procedures or requirements do not require, or accord greater legal status or effect to, the implementation or application of a specific technology or technical specification for performing the functions of creating, storing, generating, receiving, communicating, or authenticating electronic records or electronic signatures; and

(B) if enacted or adopted after June 30, 2000, makes specific reference to this chapter.

Generally speaking, under 15 U.S.C. § 7002, (a) "clean" version of UETA (i.e., the version approved and recommended by the NCCUSL) will not preempted by the E-Sign Act, (b) a state version of UETA whose scope is limited pursuant to section 3(b)(4) of UETA may be preempted, at least to some extent, and (c) any alternative laws regarding "the use or acceptance...of electronic records or electronic signatures..." will be preempted unless[38] (i) they are consistent with nearly all of the E-Sign Act and (ii) they do not require or give special status to particular technologies for handling e-records or e-signatures. States may, therefore, be left with a difficult choice. If a state is not satisfied with the "clean" version of UETA and enacts --- or has previously enacted --- a modified version of UETA or an alternative legislative scheme, it runs the risk that the E-Sign Act

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[38]   For alternative state statutes adopted after June 30, 2000, specific reference must also be made to the E-Sign Act. See 15 U.S.C. § 7002(a)(2)(B).

will become the operative law for "any transaction in or affecting interstate or foreign commerce," 15 U.S.C. § 7001(a), within its jurisdiction. This is particularly important to consider when evaluating the California UETA, because at least Cal. Civ. C. §§ 1633.3(b)(4) and 1633.3(c) do not appear to be consistent with the electronic records and signatures and transferable records provisions of the E-Sign Act.

III.   **CONTRACT PROVISIONS FOR E-COMMERCE.**

Contract provisions for e-commerce need to evolve as a result of the rapidly changing legislative framework. In particular, persons engaged in interstate or foreign e-commerce transactions in California need to be aware of the ramifications of both the California UETA and the E-Sign Act. Persons engaged in transactions in which disclosures must be made to consumers should be particularly aware of the consumer disclosure requirements set forth in the E-Sign Act.[39]

When drafting contract provisions for parties in California that are engaged in e-commerce, in light of both the California UETA and the E-Sign Act, it is particularly important to pay attention to (a) jurisdictional, (b) choice of law, (c) dispute resolution, and (d) contractual statute of frauds issues.

Jurisdictional issues are important, because they can determine whether the California UETA or the E-Sign Act will be the controlling law. Although there are

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[39]   Although not reviewed in this overview, persons subject to record retention requirements should also become familiar with those provisions in the E-Sign Act. See, e.g., 15 U.S.C. § 7001(d).

undoubtedly some transactions that are purely intrastate, it is important to keep in mind that the E-Sign Act cuts a broad swath through the e-commerce landscape.

Choice of law issues are also important to consider. In light of the preemption provisions of the E-Sign Act, whether a contract is negotiated with an express choice of law provision or not, it will be important to consider whether the state whose law is to govern the contract has enacted a "clean" version of UETA or not. In addition, when dealing with a party in Virginia or Maryland, particular care should be given to determining whether UCITA might be applicable to a transaction.

Dispute resolution provisions should also be scrutinized. Federal and state courts --- and different arbitrators or private judges --- may have very different approaches to choice of law provisions, particularly in the interregnum between today's statutes and tomorrow's authoritative judicial decisions interpreting those statutes.

In addition, the parties should consider carefully (a) whether they want to adopt a "contractual statute of frauds," and, if so, (b) how they can best seek to preserve such a provision in their contract, and (c) how they would respond if there were a dispute over the issue and it had to be resolved by a court or some other tribunal. If the E-Sign Act is applicable to a given transaction, it may be possible to opt out of its provisions, but that is likely to require the parties' express, mutual agreement, and there is always the danger that a court may interpret the E-Sign Act to preclude such a "contractual statute of frauds." Whether or not the parties agree to a "contractual statute of frauds," they would be well advised to consider the possibility that e-mail or other informal electronic

exchanges of information could --- particularly following the enactment of the E-Sign Act --- modify the terms of what they believed to be an immutable contract.

IV. **SECURITY ISSUES REGARDING E-COMMERCE:**

ENCRYPTION AND OTHER ISSUES.

A. **Different Kinds of Threats to E-Commerce**. There are a variety of threats to e-commerce from relatively small threats, which might only affect a single individual or firm, to large threats, which could affect hundreds or thousands of people, to national or global threats, which could bring e-commerce in an entire country or throughout the world to a sudden halt. Whatever the scale of such threats, it is important to have at least some knowledge of the types of security measures that can be followed to attempt to reduce both the likelihood of harm and the extent of possible damage from such threats.

B. **Types of Security**.

1. **Physical Access Security**. Even the most secure e-commerce site offers no protection at all if an intruder or even an employee can gain access to both computer and printed records from within an e-commerce company. Common approaches to dealing with such threats include regular security checks and locked file cabinets and offices. Many companies will restrict the ability of their own employees to view private data of their customers. This may be one of the biggest dangers of e-commerce, and a high security risk, but it is a problem that may not have received the type of attention and protective measures that it deserves.

2. **<u>User Access Security</u>**. By only allowing a user to gain access to his or her own personal data after entering a password, e-commerce providers can help ensure that other users cannot view data to which they should not have access.

One security risk is "remembered" logins, usually set by "cookies," which are small data files on the user's computer. For example, the entire Amazon "one-click" process is based on a cookie that remembers which Amazon customer you are. Cookies pose a security risk, especially if other people can gain physical access to your computer or logical access to its data.

Another security risk is theft of passwords or easily guessed passwords. As America Online states constantly — don't be fooled by people calling you --- an America Online representative will <u>never</u> ask you for your password. This causes a catch-22 with physical security requirements, however. If service representatives cannot see data, and they cannot ask for a password, then how can bugs that are tied to a specific account be fixed? One possible solution might be a "two manager signoff" procedure for gaining access to customer-specific data, without revealing a password.

One user-based security risk that is often overlooked is logging. Passwords are usually not logged when someone logs in to a system. However, incorrect passwords may be, and frequently <u>are</u>, logged. This may help security professionals find attacks, but if you simply misspell your password (such as leaving a letter out), then your password could be logged, in unencrypted form, in nearly complete status, and people that should not have access to your password may be able to guess it very easily.

3.   **<u>Network Security</u>.** Firewalls, Virtual Private Networks

("<u>VPN's</u>"), and private leased telecommunications lines are all ways to enhance network

security. Firewalls on the whole can be relatively good at what they do. While there are

many reports about security flaws in server operating systems, security flaws in firewalls

do not appear to be reported as frequently. It is important to recognize that firewalls and

VPN's can, however, be compromised, especially by misconfiguration or by

compromised passwords.

4.   **<u>Encryption</u>.** Encryption is the scrambling of data in such a way

that only those who have the "key" are able to "descramble" the data.[40] "Strong"

encryption is encryption that cannot be "cracked" or "broken" even by the most powerful

computers today. "Weak" encryption is encryption that can be cracked by a very fast

computer, such as that run by the National Security Agency. "Strong" and "weak"

encryption actually describe directions along a security continuum. What was once

regarded as "strong" encryption may become progressively weaker, and encryption

techniques that might foil a single computer may be vulnerable to networks of huge

numbers of computers. Still, with better encryption techniques, particularly longer keys,

and good security procedures, particularly picking and guarding good passwords, robust

encryption is widely available.

Encryption can make networks and communications secure even from prying

eyes. For example, the SSL protocol is used by web servers to secure the transfer of data

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[40]   For a helpful introduction to cryptography, <u>see</u> S. Singh, <u>The Code Book</u> (1999).

between a web browser and a web server. Also, electronic mail can be encrypted so that it cannot be read by those who intercept it. Many VPN's and wireless networks are encrypted so the data transfer cannot be understood, even if it is viewed by someone else.

C. **Recent Legislative Initiatives Regarding Encryption.**

1. **Clipper Chip**. The Clipper Chip was (and is) a device that allowed for encryption of telecommunications transmissions so that most others could not intercept them readily. However, it had built in "back door" that would allow government authorities, under certain circumstances, to decrypt the transmissions by obtaining decryption keys from an escrow agency. This, of course, has greatly concerned privacy advocates. There is a genuine and perhaps irreconcilable tension between the government, on the one hand, and private citizens and companies, on the other hand, when it comes to encryption. These issues have not been resolved, and it may be some time before they are resolved.

2. **Export Controls**. Until recently, the U.S. government did not allow export of software that incorporated strong encryption techniques. Note that "export" has been interpreted broadly — in some circumstances, e-commerce providers could not even provide strong encryption in their SSL for secured web transactions. The National Security Agency and other government agencies have been particularly concerned about the use of strong encryption techniques by certain foreign countries, terrorist organizations, and organized crime.

Export rules have now been liberalized, to some degree. Proponents of international commerce in strong encryption had argued that strong encryption already

exists overseas (which seems undeniable) and that foreign e-commerce and encryption

providers were simply taking business away from U.S. companies, because they could

offer something that U.S. companies could not offer. In 2000, certain export controls

were modified, although strong encryption still cannot be exported to a few countries

(such as Libya and Iraq).[41]

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[41]   See http://www.bxa.doc.gov/Encryption/Default.htm for a description of
official policy regarding encryption exports.