

# The Law and Technology of Trustworthy Electronic Records

Considerations for the Securities Industry

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## I. Introduction

Traditionally, corporate recordkeeping was not considered glamorous and was largely relegated to the “backroom.” In that regard, records and information management toiled in relative obscurity, with limited budgets and support from executives. Although the picture may be somewhat different in highly regulated industries, information management has rarely been viewed as a strategic or high-value activity by senior management.

And then Enron/Andersen happened. From this high-profile story of corporate malfeasance, records destruction, information manipulation, and bankruptcy – and the wash of similar stories that have followed it – a new awareness of records and information management has emerged. Information management has never enjoyed a higher profile within many organizations, and many organizations are revisiting the way that they manage and fund their information management programs.

This newfound interest in information management is no more apparent than within the securities industry. As headlines like the one above illustrate, regulators are serious about information management, and the topic has received unprecedented scrutiny in the business press. It is within this context that this paper provides a brief overview of the law and technology of trustworthy e-records. Today more than ever, organizations must have the ability to create, capture, transmit, and store e-records in a trustworthy fashion. This paper examines why trustworthy e-records are needed; how trustworthiness can be created; and the role that WORM (Write Once, Read Many) media can play in the management of trustworthy e-records.

*“The Securities and Exchange Commission, the New York Stock Exchange and NASD today announced joint actions against five broker-dealers for violations of record-keeping concerning e-mail communications. The firms consented to the imposition of fines totaling \$8.25 million, along with a requirement to review their procedures to ensure compliance with record-keeping statutes and rules.”<sup>1</sup>*

*Not a legal opinion or legal advice. For all questions regarding compliance with specific laws and regulations seek legal counsel.*

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## II. Legal and Regulatory Issues

Today there are few questions about the legality of e-records. In fact, several laws and regulations introduced, adapted, and re-interpreted over the past several years have made clear, that in more instances than ever before, e-records will satisfy the legal requirements of the courts and regulators.<sup>2</sup> Although there are an ever-decreasing number of exceptions to this proposition, the simple fact is that the law has generally evolved to accommodate the use of e-records in place of paper records.

One of the regulations accommodating e-records in the securities industry is 17 CFR 240.17a-4 (commonly referred to as “Rule 17a-4”), which since 1997 has provided detailed guidance for broker-dealers wishing to fulfill their recordkeeping obligations under SEC Rule 17a-3 and 17a-4 and related rules and regulations by keeping records in electronic form. Although 17a-4 (i.e., others include NASD Rule 3010) is not the only regulation affecting broker dealer electronic record keeping, its approach is instructive.

17a-4 stipulates retention periods for certain records (e.g., three years in the case of communications pertaining to firm business)<sup>3</sup> and makes clear that records can be kept electronically, provided that certain requirements are met. These requirements address the type of media to be used for storage, the creation of indexes, the creation of duplicate copies of storage media, and many other issues. Viewing the e-records requirements of 17a-4 as whole, it is clear that there are two major thrusts to the regulation – integrity and accessibility. In other words, the regulation goes to great pains to maximize the likelihood that broker-dealer records stored electronically will have integrity and will be accessible over their lifespan.

One of the specific requirements of 17a-4 is that the media used to store e-records “must preserve the records exclusively in a non-rewriteable, non-erasable format.”<sup>4</sup> Other parts of the regulation specifically indicate that “optical disk technology (including CD-ROM)” can be used for the storage of e-records.<sup>5</sup> These portions of 17a-4 have commonly been interpreted as referring specifically to media that supports Write Once, Read Many (i.e., “WORM”) functionality. WORM media is designed so that once data has been written to it, the data cannot easily be altered, selectively deleted or overwritten by new data, or erased from the media altogether. While there have been reports of lobbying at the SEC to change the WORM requirement,<sup>6</sup> there are specific reasons why this functionality has been stipulated in 17a-4, which will be discussed below.

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### III. Building Trustworthy E-Records

Trustworthy e-records do not happen by accident. Rather, trustworthy e-records are the result of a proactive, informed, and committed effort. Organizations need to focus on “building” – rather than simply gathering and storing – the information that is going to be valuable over the long term for promoting and protecting their business and legal interests. Trustworthiness is most accurately thought of a *quality* that results from the *sum total* of the people, procedures, environments, strategies, and technologies used throughout the lifecycle of a business record. Trustworthiness suggests that a court, regulator, auditor – and the organization itself – can trust and rely upon the content of a record. It is possible to develop a picture of the relative trustworthiness of an e-record by examining four discrete qualities, as outlined below.

**Integrity.** An e-record has integrity if it can be demonstrated that its contents have not been altered since the e-record was created, and that the record remained complete from its creation to disposition. Unlike paper records, which have inherent features that deter alteration (such as the physical bond between ink and paper), the alteration of most e-records in their native form is easily accomplished without detection. E-records are equally susceptible to inadvertent corruption, manipulation, and overwriting from user error, media failure, and viruses. The SEC clearly had e-record integrity in mind when developing the WORM requirements of 17a-4.

**Security.** E-Records contain valuable information that must be protected. In some cases, confidentiality is required in order to protect valuable company information, and in other cases privacy protection is a legal requirement. Security is a complex process that involves many different procedures and technologies. Encryption and various methods of access control are commonly employed by organizations to protect e-record content.

**Authenticity.** An e-record is said to be authentic if it is in fact “what it purports to be.” That is, the source or origin of the e-record can be reliably demonstrated. This often requires proof of who generated an e-record, and who controlled it at a certain time. Authenticity is required for a variety of business and legal purposes.

**Accessibility.** Trustworthiness implies that an organization or an outside party will be able to rely on an e-record for business, legal or compliance purposes. A record that cannot be accessed in a timely fashion during its lifecycle precludes its use for these purposes, and also violates SEC regulations. Accessibility can be threatened by poor indexing, the lifespan of storage media, hardware obsolescence, software incompatibility, environmental degradation, and many other factors. Accessibility is an important component of an e-record’s overall trustworthiness.

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## IV. Controls for Trustworthy E-Records

The trustworthiness of an e-record is a function of the controls used to protect and ensure its integrity, security, authenticity, and accessibility. SEC 17a-4 describes a limited set of controls that focuses on the media used in broker-dealer information management systems. Regulations in other industries, such as 21 CFR Part 11 in the pharmaceutical industry, describe different controls. In any case, controls designed to ensure the trustworthiness of e-records can be broadly divided into three categories.

1. **Physical Controls.** Organizations must control access to the company's assets. Physical controls include everything from locks on doors to network security techniques and devices such as passwords and firewalls that work to protect the information assets at the heart of an organization.
2. **Procedural Controls.** Procedural controls can be found in the overall operating culture of an organization, and are commonly embodied in written policies and procedures, unwritten processes, training practices and so on. As it pertains specifically to e-records, procedural controls are typically found in Security, E-Mail, Records Management, Records Retention, and many other written policies. Migration of e-records from aging to fresh media is a good example of a procedure designed to preserve the accessibility of e-records. The firms fined by the SEC in the case mentioned at the beginning of this paper had several weaknesses in their procedural controls, such as allowing backup tapes containing e-mail records to be overwritten during the retention period; lack of employee e-mail retention instruction and training; and lack of organization and central control of e-mail records.<sup>7</sup>
3. **Technological Controls.** WORM media, digital signatures, encryption, and biometrics are all examples of technologies that are commonly used as technological controls. WORM technology works at the media level to protect the integrity of e-records during retention. Digital signatures are typically attached to documents in a manner that makes clear when a document is tampered with. And, encryption can be used to protect entire databases from prying eyes.

An organization's program for capturing, using, transmitting, storing, and retrieving e-records must include controls from each category in sufficient measure to ensure trustworthiness.

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## V. The Importance of Trustworthy E-Records

Whether or not it is consistently recognized in the corporate culture of the day, information – and increasingly, electronic information – is the lifeblood of contemporary organizations. Much of this information is required for legal, compliance, business, and audit purposes, and must be treated with care and control. Moreover, this information is of little value unless it is managed in a way that promotes its trustworthiness. Simply put, having records but not being able to use them because they lack trustworthiness is a poor use of funds, is bad business, and may in fact result in serious legal consequences.

Aside from the need to comply with regulations like 17a-4, there are many important reasons to invest in a program designed to ensure that the *right* records of business operations are managed in a *trustworthy* manner over their *lifecycle*. Electronic business processes are increasingly used for high-value transactions, e-mail is routinely used to negotiate and finalize contracts, and overall reliance on digital information grows each day. Recent studies show that that 93% of all corporate documents are created electronically.<sup>8</sup>

**Corporate effectiveness.** Control of records and information assets is a prerequisite to efficient and effective business operations. Companies need reliable information about partnerships, contracts, invoices, employee relations and a plethora of additional significant business activities. This information is relied upon for decision-making, analytical, financial, forecasting, reporting, and historical purposes. Customer Relationship Management applications depend upon reliable records and information, yet they have a notoriously high failure rate at least in part because “companies don’t spend a lot of time or energy on the data. Without the data the apps may be great, but they don’t work.”<sup>9</sup> In other words, information management is not just a defensive activity designed to protect against possible legal pain in the future. Rather, it is also an offensive strategy that can add top-line value.

**Sarbanes Oxley Act of 2002.** The business events of the early years of this new century have ushered in a new era of lawmaking and public scrutiny that places emphasis on corporate accountability and transparency. The Sarbanes-Oxley Act of 2002, by raising the stakes for corporate malfeasance, embodies the attitudes of this emerging era. Among other things, Sarbanes-Oxley (Section 802) imposes up to a 20 year prison term for an individual who “knowingly alters, destroys, mutilates, conceals, covers up, falsifies, or makes a false entry in any record, document, or tangible object with the intent to impede, obstruct, or influence the investigation or proper administration of any matter within the jurisdiction of any department or agency of the United States . . .” The Act also dramatically increases the fines that can be levied under the Federal Sentencing Guidelines and provides various other provisions that provide very clear motivation for all organizations to take information management seriously.

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## VI. The Place of WORM Media in Information Management

**Legal & Evidentiary Benefits of WORM Use.** Although compliance with SEC 17a-4 currently provides a clear reason for broker-dealers to use WORM media in their information management systems, there are additional reasons why broker-dealers and other firms should evaluate this technology for information management purposes. As mentioned above, no technology is a panacea, and procedural, physical, and technological controls must be employed in concert to provide assurance that e-records are trustworthy and can be relied upon. Within this context, it is clear that WORM media can bring some benefit to the overall integrity and trustworthiness of e-records. These benefits include:

*“The WORM requirement is designed to ensure that electronic records are capable of being accurately reproduced for later reference by maintaining the records in an unalterable form.”<sup>10</sup>*

- **Protection from alteration.** Once data is memorialized on WORM media, there is no simple or practical way to alter its contents. This effectively reduces the risk that stored data will be purposefully or inadvertently altered. Given that the majority of an e-record’s “life” is spent being stored, this benefit should not be underestimated. Whether through user error, exposure to viruses, or purposeful efforts to change the content of e-records, WORM media can provide an additional layer of protection.
- **Discovery and investigations.** The use of WORM media and other controls can help to prevent questions of e-record trustworthiness from becoming an issue during the course of trials and other formal proceedings. The evidentiary benefits of WORM media are generally well understood and independently documented, which works to minimize the chances of an expensive “trial within a trial” that examines e-record trustworthiness.
- **Spoliation.** “Spoliation” is a legal term that refers to the destruction of evidence. Because it is demonstrably difficult to alter and delete data stored on WORM media, WORM media may provide a useful defense in cases of spoliation, by showing that intentional alteration and destruction was not plausible, and that deletion was nearly impossible in the case of negligent or mistaken actions. Given the focus on alteration and destruction of evidence in Sarbanes-Oxley, this benefit should not be overlooked.

The legal and evidentiary benefits of WORM media were discussed at length in SEC guidance to broker-dealers following the passage of the E-SIGN Act in 2000. Among other things, E-SIGN allows US businesses to maintain contracts and other records in electronic form. In their guidance, the SEC defended the need for WORM media, stating that it works to ensure that electronic records “are accurate, accessible, and capable of accurate reproduction for later reference,” as required by the E-SIGN Act and the SEC’s own regulations.<sup>11</sup> The SEC goes on to say that their electronic storage requirements “are substantially justified by the need to protect investors and ensure the soundness of the securities markets.”<sup>12</sup>

**Operational Functionality.** The evidentiary benefits of WORM media need to be weighed against its operational functionality and cost relative to other media types. WORM functionality is offered in a variety of derivations, with some types offering greater storage volumes, faster access, and other important functionality.

On the evidentiary side, the SEC does not accord greater legal status or effect to any particular type of WORM media, noting that “optical tape, CD-ROM, and certain other methods of electronic storage are available in WORM and can provide the same safeguards against data manipulation and erasure that optical disk provides.”<sup>13</sup> Organizations should examine the relative

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strengths and weaknesses of each type of WORM media within the context of their information management program as a whole to determine the appropriate balance between compliance and legal needs, and operational requirements. Some factors to consider include:

- **Speed.** The ability of an information management system and the media it employs to readily write and access large amounts of data may be critical. In some applications where less data is in play or media access occurs offline, speed and throughput may be less important.
- **Accessibility.** In many information management applications, the amount of time and energy required to access stored records is an important issue. Regulators and courts may impose quick turnaround times, and quick access to records may be needed to resolve a customer complaint. For example, 17a-4 requires certain e-records to be stored in an “easily accessible place” for the first two years of their retention period.<sup>14</sup>
- **Cost.** The cost of media, hardware, storage facilities, maintenance, and all other factors should be accurately calculated. There are often many hidden costs, especially if records are stored in an unorganized or obsolete fashion. The cost of finding and providing e-records in the context of litigation can be extremely high, especially when system and employee downtime is considered. In one relatively simple case, experts estimated that it would take approximately 600 hours to search a year’s worth of backup tapes, and would cost about \$99,000.<sup>15</sup>
- **Longevity.** Every storage medium and the hardware and software used to access it has a relatively predictable lifespan. Environmental conditions degrade media, and advances in hardware and software create obsolescence. The length of time e-records will be required should be considered relative to the expected lifespan of storage media and systems.

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## VII. Conclusion

Information management has a higher profile in corporate America today than it likely has had at any time in modern history. Whether or not this period of heightened awareness will have a permanent effect on the business landscape is anyone's guess, but new laws like Sarbanes-Oxley, heightened regulatory scrutiny, and the public perception that information management issues are inextricably linked to corporate accountability are all powerful motivators.

Trustworthy e-records are the cornerstone of an organization's ability to operate effectively, meet customer needs, accurately plan and forecast, and meet legal and compliance needs – but they do not happen by accident. Firms in the securities industry should closely examine existing information management practices to ensure that they are not hampering business effectiveness and creating unnecessary liability. Physical, procedural, and technological controls all play an important part in ensuring the trustworthiness of e-records. In that context, WORM media can play a valuable role in helping organizations to build electronic business records that serve to promote and protect their business and legal interests.

## VIII. About Kahn Consulting

Kahn Consulting, Inc. (KCI) is a consulting firm specializing in the legal, compliance, and policy issues of information technology and information lifecycle management. Through a range of services including information and records management program development; electronic records and email policy development; Information Management Compliance audits; product assessments; legal and compliance research; and education and training, KCI helps its clients address today's critical issues in an ever-changing regulatory and technological environment. Based in Chicago, KCI provides its services to Fortune 500 companies and government agencies in North America and around the world. Kahn has advised a wide range of clients, including International Paper, Dole Foods, Sun Life Financial, Time Warner Cable, Kodak, McDonalds Corp., Hewlett-Packard, United Health Group, the Federal Reserve Banks, Ameritech/SBC Communications, Prudential Financial, Motorola, Altria Group, Starbucks, Mutual of Omaha, EMC Corp., Merck and Co., Sony Corporation, Microsoft, and the Environmental Protection Agency. More information about KCI, its services and its clients can be found online at: [www.KahnConsultingInc.com](http://www.KahnConsultingInc.com).

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## IX. Endnotes

<sup>1</sup> SEC press release, December 03, 2002. Available at: <http://www.sec.gov/news/press/2002-173.htm>

<sup>2</sup> See, for example, the Electronic Signatures in National and Global E-Commerce Act of 2000 (E-SIGN) and the Uniform Electronic Transactions Act (UETA), two recent statutes that specifically address the use or electronic records in place of paper records.

<sup>3</sup> 17a-4(a)(4). See also SEC press release, December 03, 2002. Available at: <http://www.sec.gov/news/press/2002-173.htm>

<sup>4</sup> 17a-4(f)(2)(ii)(A).

<sup>5</sup> 17a-4(f)(2)(i).

<sup>6</sup> See for example, Lucas Mearian, "Financial firms seek revision of WORM archiving rule," Computerworld April 04, 2003.

<sup>7</sup> SEC press release, December 03, 2002. Available at: <http://www.sec.gov/news/press/2002-173.htm>

<sup>8</sup> Lyman, Peter and Hal R. Varian, "How Much Information," 2000, UC Berkeley. Online: <http://www.sims.berkeley.edu/how-much-info> (date accessed July 20, 2002).

<sup>9</sup> "Is CRM all it's cracked up to be?" CNET News.com, April 3, 2002.

<sup>10</sup> "Commission Guidance to Broker-Dealers on the Use of Electronic Storage Media Under the Electronic Signatures in Global and National Commerce Act of 2000 With Respect to Rule 17a-4(f)," Federal Register Vol. 66, No. 88, pp. 22916-22921.

<sup>11</sup> "Commission Guidance to Broker-Dealers on the Use of Electronic Storage Media Under the Electronic Signatures in Global and National Commerce Act of 2000 With Respect to Rule 17a-4(f)," Federal Register Vol. 66, No. 88, p. 22918.

<sup>12</sup> "Commission Guidance to Broker-Dealers on the Use of Electronic Storage Media Under the Electronic Signatures in Global and National Commerce Act of 2000 With Respect to Rule 17a-4(f)," Federal Register Vol. 66, No. 88, p. 22919.

<sup>13</sup> SEC 17a-4 Adopting Release, 62 FR 6469.

<sup>14</sup> 17a-4(a).

<sup>15</sup> Aragon, Lawrence, "E-Mail is Not Beyond the Law," PC Week, October 6, 1997.

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