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for Financial Services

ANSI X9.84-2010

Biometric Information Management and Security

for the Financial Services Industry

Accredited Standards Committee X9, Incorporated
Financial Industry Standards

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Introduction

Business practice has changed with the introduction of computer-based technologies. The substitution of electronic transactions for their paper-based predecessors has reduced costs and improved efficiency. Trillions of dollars in funds and securities are transferred daily by telephone, wire services, and other electronic communication mechanisms. The high value or sheer volume of such transactions within an open environment exposes the financial community and its customers to potentially severe risks from accidental or deliberate alteration, substitution or destruction of data. Interconnected networks, and the increased number and sophistication of malicious adversaries compound this risk.

The inevitable advent of electronic communications across uncontrolled public networks, such as the Internet, is also increasing risk to the financial industry. The necessity to expand business operations onto these environments has elevated the awareness for strong identification and authentication and created the need for alternate forms of identification and authentication. The financial community is responding to these needs.

Biometrics, the “something you are” identity factor, has come of age, and includes such technologies as finger image, voice identification, eye scan, facial image, and the like. The cost of biometric technology has been decreasing while the reliability has been increasing, and both are now acceptable and viable for the financial industry.

This Standard, ANSI X9.84-2010, *Biometrics Management and Security*, describes the cryptographic requirements, techniques, protocols and syntax for storage and transfer of biometric information, and for using biometrics as an identification mechanism and authentication mechanism for secure remote electronic access or local physical access controls for the financial services, or other industries.

Biometrics can be used for human identification and authentication for physical and logical access. Logical access can include access to applications, services, or entitlements. This standard promotes the integration of biometrics into the financial industry. It positions biometric technology to strengthen public key infrastructures (PKI) for higher identification and authentication by providing stronger methods as well as multi-factor authentication. In addition, this Standard allows continuous reassurance that the entity about to generate a digital signature is, in fact, the person authorized to access the private key.

The success of a biometric system with the public is based on a number of factors:

- Convenience and ease of use
- Level of apparent security
- Performance
- Non-invasiveness

These factors differ among the available biometric technologies. Fingerprint, face identification, speech identification, and verification of written signatures all appear to be well accepted, with only a small number of people concerned about abuse by law enforcement or other organizations.

Privacy considerations regarding the use of biometrics are an important issue and the reader is encouraged to investigate if any relevant statutes govern the use of biometrics in the locale(s) of the deployment. The use of some biometric technologies has raised objections due to religious beliefs. Others have been thought to be intrusive because their use requires physical interaction. If raw biometric data will be stored in the system, user agreement may need to be obtained prior to or during enrollment. Besides, biometric protection policy may be disclosed to address privacy or legal concerns.

The authentication systems discussed in this standard are those for a closed user groups in which the group members have agreed to use biometric identification or perform identification themselves. Such agreements might be explicit (e.g. service agreement) or implicit (e.g. entering a facility indicating a clear intent to conduct a transaction). Such systems that will be used to monitor an indefinite number of people are excluded from the scope of this technical report.

The techniques specified in this Standard are designed to maintain the integrity and confidentiality of biometric information and provide authentication. However, this standard does not guarantee that a particular implementation is secure. It is the responsibility of the financial institution to put an overall process in place with the necessary controls to ensure that the process is securely implemented. Furthermore, the controls should include the application of appropriate audit tests in order to verify compliance with this standard.

This standard assumes that the identity of the individual is recognized as part of the transaction process and that the use of the biometric is solely for the purpose of facilitating a financial transaction.

The techniques specified in this Standard are designed to maintain the integrity and confidentiality of biometric information and provide strong authentication. However, the Standard does not guarantee that a particular implementation is secure. It is the responsibility of the financial institution to put an overall process in place with the necessary controls to ensure that the process is securely implemented. Furthermore, the controls should include the application of appropriate audit tests in order to verify compliance with this Standard.

NOTE The user's attention is called to the possibility that compliance with this technical report may require use of an invention covered by patent rights.

By publication of this technical report, no position is taken with respect to the validity of this claim or of any patent rights in connection therewith. The patent holder has, however, filed a statement of willingness to grant a license under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license. Details may be obtained from the standards developer.

Suggestions for the improvement or revision of this Standard are welcome. They should be sent to the X9 Committee Secretariat, Accredited Standards Committee X9 Incorporated, Financial Industry Standards, 1212 West Street, Suite 200, Annapolis MD 21401.

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Biometric Information Management and Security for the Financial Services Industry

1 Scope

This Standard describes the security framework for using biometrics for authentication of individuals in financial services. It introduces the types of biometric technologies and addresses issues concerning their application. This Standard also describes the architectures for implementation, specifies the minimum security requirements for effective management, and provides control objectives and recommendations suitable for use by a professional practitioner. Within the scope of this Standard the following topics are addressed:

- Security for the collection, distribution, and processing, of biometric data, encompassing data integrity, authenticity, and non-repudiation.
- Management of biometric data across its life cycle comprised of the enrollment, transmission and storage, verification, identification, and termination processes.
- Usage of biometric technology, including one-to-one and one-to-many matching, for the identification and authentication of banking customers and employees.
- Application of biometric technology for internal and external, as well as logical and physical access control.
- Encapsulation[1] and cryptographic protection of biometric information for security, interoperability, and data confidentiality..
- Secure transmission and storage of biometric information during its life cycle.
- Security of the physical hardware used throughout the biometric data life cycle.
- Cryptographic techniques for data integrity, authenticity, and data confidentiality of biometric information.
- Validation of credentials presented at enrollment to support authentication as required by risk management;
- Surveillance to protect the financial institution and its customers;

[1] Analogous to the ANSI PIN Block, refer to ANSI X9.8 and ISO 9564 PIN Management and Security standards.

