

December, 3,2002
M1/02-0276

Project Proposal –Signature/Sign Image Based Interchange Format

1. Source of the Proposed Project

1.1. Title

“Signature/Sign Image Based Interchange Format”

1.2. Date Submitted

October 22, 2002

1.3. Proposer

INCITS Technical Committee M1 Biometrics

2. Process Description for the Proposed Project

2.1. Project Type

D - this is a standard development project

2.2. Type of Document

The project is expected to result in an ANSI/INCITS standard.

2.3. Definitions of Concepts and Special Terms

Sign Image – the sequentially sampled X,Y points of a digitized sign or signature, including time and, optionally, pressure values.

X resolution – the number of dots per inch which the digitizer resolves in the X direction. This is defined as X_r . The minimum value of X_r shall be ---.

Sign Image Interchange Data – Data captured directly from the digitized sign and stored for subsequent processing.

Y resolution - the number of dots per inch which the digitizer resolves in the Y direction. This is defined as Y_r . The minimum value of Y_r shall be ---.

T resolution (T_r) - the units of the time associated with the sequential point values shall be milliseconds. The minimum value of T_r shall be --- samples per second.

P resolution - the range of pressure values which the digitizer returns (0-N). The minimum value of N shall be 1. Values shall indicate points in contact, out of contact, and "in proximity."

Different digiters provide different resolution capabilities and sampling rates. Some are capable of generating pressure values and some are not. Some generate coordinate values points off the surface and some do not.

2.4. Expected Relationship with Approved Reference Models, Architectures, etc.
None

2.5. Recommended INCITS Development Technical Committee
INCITS Technical Committee M1 – Biometrics

2.6. Anticipated Frequency and Duration of Meetings
It is anticipated that this project would require one-day meetings each quarter.

2.7. Target Date for Initial Public Review
It is estimated that the draft document would be ready for submission to INCITS for Milestone 4 processing in June 2003.

2.8. Estimated Useful Life of Standard
There is no known limitation on the useful life of this proposed standard.

3. Business Case for Developing the Proposed Standard

3.1. Description

This proposed standard will define a data record interchange format for storing, processing or transmitting the information from the sign or signature image data. There are currently numerous digitizers used for capturing signature data in this manner and there are also a number of different methods of representing these data for the purposes of recording the electronic signatures. The purpose of this document is to define a standard for capturing signs/signatures for the purpose of biometric comparison. It is not intended to define a standard for electronic signature capture for other purposes, although it may be relevant to those applications. This standard is intended to apply to those applications limited by the amount of storage required as well as those not so constrained. A lower bound will be established for each of the resolutions defined above.

3.2. Existing Practice and the Need for a Standard

Particularly at Point of Sale there are billions of electronic signatures captured each year for the purpose of associating them with card based transactions. A number of systems generating these electronic signatures are also capable of conducting biometric tests on the data so captured. There are also a number of signature biometric systems based upon signature input from a variety of digitizers and from different biometric vendors particularly in the area of electronic document control. With the added catalyst of the ESign Act and the developing Application Profile for Interoperability and Data Interchange - Point-of-Sale Biometric Identification , there is now an urgent need to develop a standard for a Sign/Signature Image Based Interchange Format.

Currently, there are two basic methods for signature matching and verification. The first relies on a "feature-based" approach that compares features extracted from the the image data captured from a digitizer with a previously established template. The second approach uses data extracted from special pens which typically do not capture X,Y values explicitly but generates data associated with acceleration, pressure, angle and force. This standard is aimed at the first of these methods which constitute the vast majority of systems. Even with the successful development of these standards, information recorded by one system cannot be used by algorithms designed to operate using the other type of system. For systems capable of capturing both types of data the standard will apply to the data relating to X, Y T and P values.

Digitizers vary in the data they generate. Some can accurately return pen position some way off the surface and produce an "in-proximity" signal representing the maximum distance above the surface for accurate coordinates. Systems using different digitizers should pre-process the data to generate coordinate values in the form (X,Y,T,P) as defined above.

The establishment of an image-based Signature/sign standard will provide:

- Interoperability among vendors using different digitizers to capture the sign.
 - Interoperability among vendors relying on signature/sign based data
 - Interoperability among vendors using pressure coordinates and those not using pressure coordinates.
-
- Encouragement for the adoption of biometrics in applications where interoperability is vital and digitized Sign data are available.

3.3. Implementation Impacts of the Proposed Standard

3.3.1. Development Costs

Technical editor labor is expected to total approximately two staff months.

3.3.2. Impact on Existing or Potential Markets

Existing and future markets where a digitizer capability already exists (eg PDA's) will benefit from this proposed standard by providing a low cost solution and will be the the more likely to adopt biometrics because of the interoperability across different devices and vendors.

3.3.3. Costs and Methods for Conformity Assessment

The cost and method of conformity assessment is not known at this time. However, it is likely that test data records will be provided as part of this standard to determine compliance.

3.3.4. Return on Investment

There is no known data on which to make an estimate.

3.4. Legal Considerations

3.4.1. Patent Assertions

There should be no patent issues since the captured image is not technology dependent.

3.4.2. Dissemination of the Standard

Drafts of this standard will be distributed electronically. There may be distribution constraints as this document reaches different stages of development and processing within INCITS and ISO/IEC JTC1.

4. Related Standards Activities

4.1. Existing Standards

ANSI/NIST/ITL 1-2000

Common Biometric Exchange File Format (CBEFF), NISTIR 6529-2001.

ANSI/INCITS 358-2002 - Information Technology - BioAPI Specification

ANSI/X9 X9.84-2001 - Biometric information management and security

ISO/IEC FCD 7816-11.2 - Personal Verification Through Biometric Methods In IC Cards.

4.2. Related Standards Activity

Related standards activity includes:

INCITS Technical Committees B10, L3, and T4; ASC X9;

NIST/BC Biometric Interoperability, Performance and Assurance WG, and

BioAPI Consortium.

4.3. Recommendations for Close Liaison

INCITS Technical Committees B10, L3, and T4.

ASC X9F4

NIST/BC Biometrics WG

BioAPI Consortium

IBIA