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**BIOMETRICS**  
DEPARTMENT OF DEFENSE

**Department of Defense  
Biometrics Management Office  
Standards Status and Activities Update  
18 May 2006**

**Version 1.0**

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## **Summary**

This document contains a consolidated view of the DoD BMO activities related to the Biometric standards development and adoption. It summarizes current state of the Biometric standards sponsored by the DoD BMO, lists recent INCITS M1 letter ballots and draft standards under Public Review, describes the DoD BMO technical contributions to INCITS M1 and JTC 1/SC 37 submitted during the past several weeks, and lists a number of standing calls for contributions and other documents available for review and comments that are of specific interest for the DoD.

This document also provides a comprehensive list of the current status of all Biometric standards development projects and standards development committees where the projects take place. The information in this document is changing frequently, is being updated on a regular basis. The document is intended for distribution within the DoD Biometric Standards Working Group and DoD Biometrics Community of Interest. All inquiries regarding this document and requests for additional information should be submitted to its editor:



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**Biometric Standards Sponsored by DoD BMO**

The following two tables contain a summary and detailed status, as well as a recent timeline of the national and international Biometric standards that are sponsored by the DoD BMO and for which BMO provides editorship and/or substantial technical contributions.

**Status Summary**

<b>Project / Standard</b>	<b>Sponsors</b>	<b>Status</b>	<b>Note</b>
INCITS Project 1703-D - <i>Conformance Testing Methodology for ANSI INCITS 358-2002, BioAPI Specification</i>	NIST, DoD BMO	30-day Letter Ballot	LB closed on 19 May
ISO/IEC FDIS 24709-1: <i>Conformance Testing Methodology for BioAPI - Part 1: Methods and Procedures</i>	DoD BMO	FDIS Ballot	
ISO/IEC FCD 24709-2: <i>Conformance Testing Methodology for BioAPI - Part 2: Test Assertions for Biometric Service Providers</i>	DoD BMO	FCD Ballot	LB closed on 23 May
INCITS Project 1749-D: <i>Conformance Testing Methodology for INCITS 381, Finger Image Data Interchange Format</i>	DoD BMO	Working Draft	
INCITS Project 1676-D: <i>Biometric Profile - Interoperability and Data Interchange - DoD Implementations</i>	DoD BMO	Public Review	PR closed on 15 May

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**Detailed Status and Timeline**

Sponsored Standard Status Timeline	Action Items	References
<p>INCITS Project 1703-D - <i>Conformance Testing Methodology for ANSI INCITS 358-2002, BioAPI Specification</i></p> <p>25 Jan 06: The 4<sup>th</sup> draft is being prepared by the editor; no new contributions / comments have been submitted to date</p> <p>15 Mar 06: The 4<sup>th</sup> draft has been discussed at the Feb M1 meeting. The next (5<sup>th</sup>) draft is being prepared by the editor to be circulated for a 30-day Letter Ballot (LB) on forwarding it for Public Review</p> <p>07 Apr 06: The 5<sup>th</sup> draft has been posted, updated, and discussed at the Apr M1 meeting.</p> <p>19 Apr 06: 30-day LB on forwarding the draft for Public Review has started</p> <p><b>20 May 06:</b> the LB closed.</p>	<p>a. BMO to monitor the project progress and respond to the LB by 19 May 06</p> <p>b. NIST to take the required steps in support of the public review</p>	<p><a href="#">M1/05-0784</a> - Joint DoD BMO / NIST / TBF contribution</p> <p><a href="#">M1/06-0073</a> - Draft 4</p> <p><a href="#">M1/06-0074</a> - Call for comments on Draft 4</p> <p><a href="#">M1/06-0156</a> - Recommendation to M1 on public review</p> <p><a href="#">M1/06-0169rev</a> - Draft 5</p>
<p>ISO/IEC FDIS 24709-1: <i>Conformance Testing Methodology for BioAPI - Part 1: Methods and Procedures</i></p> <p>25 Jan 06: Last SC 37 WG-2 meeting (Jan 2006) recommendations instruct the editors to prepare the FDIS text for delegates review, and then submit the final draft for the FDIS ballot.</p> <p>15 Mar 06: The FDIS text and abstract have been prepared and sent to the Secretariat</p> <p><b>18 Apr 06:</b> The FDIS text has been posted at SC 37 site and circulated to NB for information. FDIS ballot is to be issued.</p>	<p>a. BMO to monitor the project progress, and participate in the ballot when it starts</p>	<p><a href="#">SC 37 N1547</a> - Text for FDIS ballot</p>
<p>ISO/IEC FCD 24709-2: <i>Conformance Testing Methodology for BioAPI - Part 2: Test Assertions for Biometric Service Providers</i></p> <p>25 Jan 06: Jan 2006 SC 37 WG-2 meeting approved progression of this project to FCD</p> <p>15 Mar 06: FCD text has been prepared and submitted to the Secretariat; the ballot has been initiated (due date 23 May) and M1 call for comments</p>	<p>a. Project Editor (BMO) to prepare a proposed disposition of comments and proposed new draft in time for the next (Jul 2006) SC 37 meeting</p>	<p><a href="#">SC 37 N1474</a> - Text for FCD ballot</p> <p><a href="#">M1/06-0191</a> - M1 call for comments</p> <p><a href="#">M1/06-0319</a> - US NB vote on FCD ballot</p>

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Sponsored Standard Status Timeline	Action Items	References
<p>(due date 17 May) has been issued</p> <p><b>11 Apr 06:</b> US NB vote on the FCD ballot ("YES", no comments) has been posted</p>		
<p>INCITS Project 1749-D: <i>Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards - Part 4: Conformance Testing Methodology for INCITS 381, Finger Image Data Interchange Format</i></p> <p>25 Jan 06: 1<sup>st</sup> working draft is posted</p> <p>25 Apr 06: proposed 2<sup>nd</sup> working draft (BMO technical contribution) is circulated to DoD BSWG for review and comment</p> <p><b>15 May 06:</b> proposed 2<sup>nd</sup> working draft has been posted.</p>	<p>a. Project Editor (BMO) to present the draft at the June M1.3 meeting; prepare a disposition of comments and a revised draft</p> <p>b. BMO to request M1 to issue, out of June meeting, a 30-day LB on forwarding the revised draft to INCITS for public review</p>	<p><a href="#">M1/05-0720</a> - 1st working draft  <a href="#">M1/06-0398</a> - Current (2<sup>nd</sup>) working draft</p>
<p>INCITS Project 1676-D: <i>Biometric Profile - Interoperability and Data Interchange - DoD Implementations</i></p> <p>25 Jan 06: 4<sup>th</sup> draft is posted; a letter ballot (LB) for Public Review is in progress</p> <p>15 Mar 06: LB for public review passed, 5<sup>th</sup> draft is prepared and submitted to M1.4 Chair</p> <p>31 Mar 06: Public Review has been initiated (ends on 15 May)</p> <p><b>15 May 06:</b> Public Review completed</p>	<p>a. BMO to participate in the public review process</p> <p>b. Editor (BMO) to address Public Review comments as necessary</p>	<p><a href="#">M1/06-0033</a> - 5th Draft</p>

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**Recent Letter Ballots**

The following table contains a list and status of the recent M1 letter ballots circulated to the member organizations. DoD BMO as a voting member has an obligation to vote on these ballots. All ballots listed in the table have been circulated to the BSWG members for review and comments.

<b>LB Subject</b>	<b>Due Date / Status</b>	<b>USG Coordination</b>	<b>References</b>	<b>Proposed Vote</b>
Approval of the TAG recommendation on ISO/IEC FDIS 19794-3, Biometric Data Interchange Formats - Part 3: Finger Pattern Spectral Data	3 May 2006 Closed	DoD BMO, NIST, DHS, DoT	<a href="#">M1/06-0412</a> – letter ballot <a href="#">SC 37 N1488</a> – FDIS Text	YES
Forwarding the revised draft INCITS Project 1749-D: Conformance Testing Methodology Standard - Part 6: Conformance Testing, Iris Image to INCITS for public review	19 May 2006 Closed	DoD BMO, NIST, DHS	<a href="#">M1/06-0388</a> – letter ballot <a href="#">M1/06-0130</a> – current draft text	NO with comments
Forwarding the revised draft of INCITS Project 1703-D: Conformance Testing Methodology for ANSI INCITS 358-2002, BioAPI Specification to INCITS for public review	19 May 2006 Closed	NIST, DoD BMO	<a href="#">M1/06-0387</a> – letter ballot <a href="#">M1/06-0169rev</a> – current draft text	YES
Forwarding the revision of INCITS 383: Application Profile - Interoperability and Data Interchange - Biometrics-Based Verification and Identification of Transportation Workers to INCITS for public review	19 May 2006 Closed	DoD BMO, NIST, DHS, DoT	<a href="#">M1/06-0389</a> – letter ballot <a href="#">M1/06-0027</a> – current revision text	YES with comments
Forwarding the revised draft of INCITS Project 1749-D: Conformance Testing Methodology Standard - Part 3: Conformance Testing, Finger Pattern to INCITS for public review	19 May 2006 Closed	DoD BMO, NIST, DHS	<a href="#">M1/06-0391</a> – letter ballot <a href="#">M1/06-0368</a> – current draft text	NO with comments
Forwarding the revised draft of INCITS Project 1797-D: Information technology - Biometric Data Interchange Formats - Keystroke Dynamics Data (Ref: M1/06-0268) to INCITS for public review.	19 May 2006 Closed		<a href="#">M1/06-0397</a> – letter ballot <a href="#">M1/06-0268</a> – current draft text	YES with comments
Withdrawal of M1.5 project 1602-D, Part 6: Performance and Interoperability Testing of Data Interchange Formats	26 May 2006		<a href="#">M1/06-0413</a> – letter ballot	YES

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**Standards in Public Review**

The following table contains a list and status of the M1 draft standards, currently in Public Review stage. DoD BMO selectively, based on availability of resources, reviews some of the standards, and submits the resulting comments to INCITS. The BSWG members are notified when a standard becomes available for Public Review, and are encouraged to review and comment on the standard.

Standard	Due Date / Status	Leading USG Agency	Notes
<b>INCITS 420 Draft</b> Information technology - Biometric Profile - Interoperability and Data Interchange - Point-of-Sale Biometric-Based Verification and Identification	15 May 2006 Closed		
<b>INCITS 421 Draft</b> Information technology - Biometric Profile - Interoperability and Data Interchange - DoD Implementations	15 May 2006 Closed	DoD BMO	BMO is a sponsor of this standard
<b>INCITS 422 Draft</b> Information technology - Application Profile for Commercial Biometric Physical Access Control	15 May 2006 Closed	NIST, DoD BMO	
<b>INCITS 423.1 Draft</b> Information technology - Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards - Part 1: Generalized Conformance Testing Methodology	15 May 2006 Closed	DoD BMO, NIST, DHS	Comments submitted to INCITS
<b>INCITS 385:2004 Amendment 1 Draft</b> Information technology - Face Recognition Format for Data Interchange Amendment 1: 3-d Face	15 May 2006 Closed		
<b>INCITS 409.4 Draft</b> Information technology - Biometric Performance Testing and Reporting - Part 4: Operational Testing Methodologies	15 May 2006 Closed		

## Recent BMO Technical Contributions

Technical Contribution	Document	Date	Other USG Coordination
DoD BMO Technical Contribution to AHGIER on Determination of Fingerprint Minutiae Angles	M1/06-0396	18 Apr 2006	
2 <sup>nd</sup> draft of INCITS Project 1749-D "Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards - Part 4: Conformance Testing Methodology for INCITS 381, Finger Image Data Interchange Format"	M1/06-0398	11 May 2006	
DoD BMO contribution to AHGBEA Study Report on Biometrics in E-Authentication – Enrollment Process / Enrollment Architecture	M1/06-0439	Not posted yet	
Revised project proposal for INCITS Project 1749-D Part 1: Generalized Conformance Testing Methodology for Biometric Data Records Specified in INCITS Data Interchange Formats	M1/06-448	22 May 2006	NIST, DHS
Revised project proposal for INCITS Project 1749-D Part 4: Conformance Testing Methodology for Biometric Data Records Specified in INCITS 381-2004, Finger Image Data Interchange Format	M1/06-0450	22 May 2006	NIST, DHS

## Recent and Upcoming Standards Body Meetings

M1.3 AHG on Interoperable  
Encoding Rules 11 May 06, Falls Church, VA  
SC 37 SG on BioAPI Lite 15 May 06, teleconference  
SC 37 SG on Conformance Issues Related  
to Data Interchange Formats 22 May 06, teleconference  
INCITS M1 Plenary and Task Groups: 12-16 June 06, Falls Church, VA  
JTC 1/SC 37 Plenary and Working Groups: 3-11 July 06, London, UK

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Biometric Standards Adoption Progress

The following table contains a list and status of approved national and international Biometric standards that have been planned to become part of the DISR. Submission of the standards to DISR is performed through the established Change Request (CR) process. Each CR is circulated to the BSWG members for their review, comment and vote.

Category of Standards	Standard Name	Description	DISR Status
Fingerprint Image	ANSI/NIST ITL 1-2000 Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information	This standard defines the content, format, and units of measurement for the exchange of fingerprint, palm print, facial/mug shot, and SMT full-image information that may be useful in identifying a subject.	Mandated
	ANSI INCITS 381-2004 Finger Image-Based Data Interchange Format	This standard specifies an interchange format for the exchange of image-based fingerprint and palm print recognition data. It defines the content, format, and units of measurement for such information. This standard is intended for those identification and verification applications that require the use of raw or processed image data containing detailed pixel information.	Pending (CR Submitted as Mandated Standard)
	ISO/IEC 19794-4 Biometric Data Interchange Formats - Part 4: Finger Image Data	This standard specifies a data record interchange format for storing, recording, and transmitting the information from one or more finger or palm image areas within an ISO/IEC 19785-1 CBEFF data structure. This can be used for the exchange and comparison of finger image data.	Pending (CR ready, but not submitted as Emerging Standard)
Fingerprint Template	ANSI INCITS 378-2004 Finger Minutiae Format for Data Interchange	This standard defines a method of representing fingerprint information using the concept of minutiae. It defines the placement of the minutiae on a fingerprint, a record format for containing the minutiae data, and optional extensions for ridge count and core/delta information.	Pending (CR Submitted as Mandated Standard)
	ANSI INCITS 377-2004 Finger Pattern Based Interchange Format	This standard specifies an interchange format for the exchange of pattern-based fingerprint recognition data. It describes the conversion of a raw fingerprint image to a cropped and down-sampled finger pattern followed by the cellular representation of the finger pattern image to create the finger-pattern interchange data.	Pending (CR Submitted as Mandated Standard)

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Category of Standards	Standard Name	Description	DISR Status
	ISO/IEC 19794-2 Biometric Data Interchange Formats - Part 2: Finger Minutiae Data	This standard specifies a concept and data formats for representation of fingerprints using the fundamental notion of minutiae. It is generic, in that it may be applied and used in a wide range of application areas where automated fingerprint recognition is involved. ISO/IEC 19794-2:2005 contains definitions of relevant terms, a description of how minutiae shall be determined, data formats for containing the data for both general use and for use with cards, and conformance information.	Pending (CR ready, but not submitted as Emerging Standard)
Face	ANSI INCITS 385-2004 Face Recognition Format for Data Interchange	This standard specifies definitions of photographic environment, subject pose, focus, etc.) properties, digital image attributes and a face interchange format for relevant applications, including human examination and computer automated face recognition.	Pending (CR Submitted as Mandated Standard and approved by IA TWG, but the status needs to be clarified)
	ISO/IEC 19794-5 Biometric Data Interchange Formats - Part 5: Face Image Data	This standard specifies scene, photographic, digitization and format requirements for images of faces to be used in the context of both human verification and computer automated recognition. The format is designed to allow for the specification of visible information discernable by an observer pertaining to the face, such as gender, pose and eye color.	Pending (CR ready, but not submitted as Emerging Standard)
Iris	ANSI INCITS 379-2004 Iris Image Interchange Format	This standard describes a format for the exchange of iris image information. It contains a definition of attributes, a data record format, sample records and conformance criteria. Two alternative formats for iris image data are described; one based on a cartesian coordinate system and the other on a polar coordinate system.	Mandated Standard
	ISO/IEC 19794-6 Biometric Data Interchange Formats - Part 6: Iris Image Data	This standard specifies two alternative image interchange formats for biometric authentication systems that utilize iris recognition. The first is based on a rectilinear image storage format and the second format is based on a polar image specification	Pending (CR ready, but not submitted as Emerging Standard)

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Category of Standards	Standard Name	Description	DISR Status
Other Modalities	ANSI INCITS 396-2005 Hand Geometry Format for Data Interchange	This standard specifies an interchange format for the exchange of hand geometry data in a silhouette format. It defines the content, format, and units of measurement for such information. This standard is intended for those identification and verification applications that require the use of an interoperable hand geometry template.	Pending (CR is being prepared)
Transmission	Electronic Fingerprint Transmission Specification (v7.1)	The purpose of this document is to specify certain requirements to which agencies must adhere to communicate electronically with the FBI's Integrated Automated Fingerprint Identification System (IAFIS). This specification is based upon ANSI/NIST ITL 1-2000 and covers the IAFIS electronic transmissions involving fingerprints.	N/A
	Electronic Biometric Transmission Specification (v1.1)	This specification describes customizations of the Federal Bureau of Investigation (FBI) Electronic Fingerprint Transmission Specification (EFTS) transactions that are necessary to utilize the Department of Defense (DoD) Automated Biometric Identification System (ABIS).	Pending (CR is being prepared)
Technical Interfaces	ANSI INCITS 358-2002 BioAPI Specification (Version 1.1)	This standard provides a high-level generic biometric authentication model; one suited for any form of biometric technology. It covers the basic functions of Enrollment, Verification, and Identification, and includes a database interface to allow a biometric service provider (BSP) to manage the Identification population for optimum performance.	Mandated Standard
	ANSI INCITS 398-2005 [NISTIR 6529-A] Common Biometric Exchange Formats Framework (CBEFF)	This standard describes a set of data elements necessary to support biometric technologies in a common way. These data elements can be placed in a single file used to exchange biometric information between different system components or between systems. The result promotes interoperability of biometric-based application programs and systems developed by different vendors by allowing biometric data interchange.	Mandated Standard
	OASIS XML Common Biometric Format (XCBF) 1.1	This specification defines a common set of secure XML encodings for the patron formats specified in CBEFF, the Common Biometric Exchange File Format (NISTIR 6529). Much of the information included in this standard has been incorporated into a more recent standard,	Emerging Standard

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Category of Standards	Standard Name	Description	DISR Status
		ANSI X9.84-2003.	
Application Profiles	NIST SP 800-76 - Biometric Data Specification for Personal Identity Verification	This document, Special Publication 800-76 (SP 800-76), is a companion document to FIPS 201. It describes technical acquisition and formatting specifications for the biometric credentials of the PIV system, including the PIV Card itself. The primary design objective behind these particular specifications is high performance universal interoperability.	Pending (CR is being prepared)
Performance Testing	ANSI INCITS 409.1-2005 Biometric Performance Testing and Reporting – Part 1: Principles and Framework	This standard addresses testing the accuracy of identification and verification devices, algorithms, and systems. This part is intended to summarize the other parts of the standard. An overview of the primary testing protocols, biometric applications, and performance metrics is presented. It also provides guidance on data analysis techniques, recording of results, and performance reporting measures available.	Pending (CR ready, but not submitted)
	ANSI INCITS 409.2-2005 Biometric Performance Testing and Reporting – Part 2: Technology Testing and Reporting	This standard specifies methods for performance testing of biometric systems and devices. It constitutes a specialization of a biometric testing framework standard in that it is concerned only with the offline use of stored (i.e., previously captured) biometric samples, and not the interaction of human subjects with a biometric sensor. The standard covers: Comparative or absolute testing of performance of biometric algorithms, components, or systems; Comparison of biometric data sets; Prediction of elements of deployed online performance; Assessment of performance available from complex data samples including repeated sample and multimodal data.	Pending (CR ready, but not submitted)
	ANSI INCITS 409.3-2005 Biometric Performance Testing and Reporting – Part 3: Scenario Testing and Reporting	This standard specifies the requirements for scenario-based biometric testing and reporting. The goal of scenario testing is to determine the overall system performance in a prototype or simulated application. Testing is carried out on a complete system in an environment that models a real-world target application of interest.	Pending (CR ready, but not submitted)

## **Calls for Comments and Other Documents of Interest**

The following table lists recent documents, posted to INCITS M1 and JTC 1/SC 37 document registers, that are of special interest to the DoD BMO, and that BMO is planning to review and, if necessary, respond to, or comment on, depending on availability of time and resources. Review of these documents will help to establish the DoD BMO position at the upcoming M1 Task Group and Plenary meetings. Technical contributions developed in relation to these documents are circulated to the BSWG members for their review, comments and consent.

<b>Document</b>	<b>Due Date</b>	<b>TC/TG</b>	<b>Comments</b>
M1/06-0012		M1.3	Revised draft of finger minutiae conformance
M1/06-0404	23 May 06	M1.3	Call for comment on revision proposal for INCITS 378
M1/06-0405	23 May 06	M1.3	Call for comment on revision proposal for INCITS 377
M1/06-0406	23 May 06	M1.3	Call for contribution and comment towards conformance test Part 2 (minutiae)
M1/06-0418		M1.3	Proposed defects in INCITS 379 and ISO/IEC 19794-6 - Iris image
M1/06-0422		M1.2	NIST comments on ten print capture using BioAPI
M1/06-0429	31 May 06	M1.2	Call for Comments & Contributions on OASIS Biometric Identity Assurance Services (BIAS) Messaging Protocol document
M1/06-0441	31 May 06	M1.2	Call for comments on FDIS 24709-1, Conformance Testing for BioAPI - Part 1: Methods and Procedure
M1/06-0455		M1.3	Editor's proposed response to PR comments, Project 1565-D (3D Face Amendment)
M1/06-0459		M1.3	SMI contribution on the requirement for encapsulation within a CBEFF structure for biometric data format records
M1/06-0463		M1.3	Second Working Draft - Fusion Information format for Data Interchange
SC37 N1564		WG3	US NB Contribution on a Draft NP on a Conformance Testing Methodology for Biometric Data Interchange records as defined in ISO/IEC 19794 "Biometric Data Interchange Format Standard"
SC37 N1563		WG3	US NB Contribution on Potential Defects in ISO/IEC 19794-4:2005 "Biometric Data Interchange Formats Part 4: Finger Image Data"

## **BMO Standards Team Activities PoC**

The following tables list the DoD BMO activities and personnel assigned to them, along with the corresponding point of contact information.

### **Activities and Points of Contact**

<b>Activity</b>	<b>Standards Team PoC</b>
<b><u>Standards Bodies Participation and Standards Development</u></b>	
INCITS M1 – Technical Committee on Biometrics (voting member, membership issues)	Dr. Ramy Guirguis
INCITS M1 – Technical Committee on Biometrics (letter ballots, public reviews, other voting issues and positions)	Mr. Gregory Zektser
INCITS M1.3 – Task Group on Biometric Data Formats (voting member)	Mr. Gregory Zektser
INCITS M1.2 – Task Group on Biometric Technical Interfaces (voting member)	Mr. Dale Hapeman
INCITS M1.4 – Task Group on Biometric Application Profiles (voting member)	Mr. Dale Hapeman
INCITS M1.5 – Task Group on Biometric Performance Testing (voting member)	Mr. Gregory Zektser
ISO/IEC JTC 1/SC 37 – Working Group 3 on Biometric Data Formats (member of US experts delegation)	Mr. Gregory Zektser
ISO/IEC JTC 1/SC 37 – Working Group 2 on Biometric Technical Interfaces (member of US experts delegation)	Mr. Gregory Zektser
NIST Revision of ANSI/NIST ITL-1 2000 (voting member, chair of CBEFF Working Group)	Mr. Dale Hapeman
INCTS M1 Ad-hoc group on encoding rules	Mr. Robert Yen
Development of DoD sponsored standards at INCITS M1 & JTC 1/SC 37	Mr. Gregory Zektser
EBTS Configuration Management	Mr. Gregory Zektser
EBTS Development	Mr. Dale Hapeman
<b><u>DoD and USG Standards Coordination</u></b>	
NSTC Subcommittee on Biometrics – Standards and Conformance ICP (Chaired by BMO Director)	Dr. Ramy Guirguis
DoD Biometric Standards Working Group (Chair)	Dr. Ramy Guirguis
DoD Biometric Standards Working Group (Secretary)	Mr. Arun Vemury
DISR IA Technical Working Group	Mr. Arun Vemury

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Activity	Standards Team PoC
DHS Biometric Coordinating Group	Dr. Ramy Guirguis
DHS US VISIT Technical Working Group	Mr. Arun Vemury
IDENT/IAFIS Interoperability IPT	Mr. Arun Vemury
<b><u>DoD Standards Support</u></b>	
Standards Support to ABIS	Mr. Dale Hapeman
Standards Support to Architecture WIPT	Mr. Arun Vemury
Standards Support to Policy WG	Mr. James Hutchinson
<b><u>Tools Development &amp; Support</u></b>	
BioAPI Conformance Testing Suite	Mr. Arun Vemury
Finger Image Quality Measurement Tool	Mr. Bob Yen
Face Image Quality Measurement Tool	Mr. Bob Yen

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## **Current Status of Biometric Standards**

The following table contains a list and status of the Biometric Standards, both approved and under development. The status of the development projects is changing frequently, and this table is updated on a regular basis, primarily based on outcome of the meetings of the Biometric standards bodies.

<b>Category of Standards</b>	<b>Standard Name</b>	<b>Description</b>	<b>Status</b>
<b>Fingerprint Image</b>	ANSI/NIST ITL 1-2000 Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information	This standard defines the content, format, and units of measurement for the exchange of fingerprint, palm print, facial/mug shot, and SMT full-image information that may be useful in identifying a subject.	Published
	ANSI INCITS 381-2004 Finger Image-Based Data Interchange Format	This standard specifies an interchange format for the exchange of image-based fingerprint and palm print recognition data. It defines the content, format, and units of measurement for such information. This standard is intended for those identification and verification applications that require the use of raw or processed image data containing detailed pixel information.	Published
	ISO/IEC 19794-4 Biometric Data Interchange Formats - Part 4: Finger Image Data	This standard specifies a data record interchange format for storing, recording, and transmitting the information from one or more finger or palm image areas within an ISO/IEC 19785-1 CBEFF data structure. This can be used for the exchange and comparison of finger image data.	Published
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 4: Conformance Testing Methodology for INCITS 381, Finger Image Data Interchange Format	This standard, when completed, will present an overview of conformance testing methodology that could be adapted to validate Finger Image Based Data Interchange Format-conformant files as specified per ANSI INCITS 381-2004.	Under Development: Working Draft

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Category of Standards	Standard Name	Description	Status
<b>Fingerprint Template</b>	ANSI INCITS 378-2004 Finger Minutiae Format for Data Interchange	This standard defines a method of representing fingerprint information using the concept of minutiae. It defines the placement of the minutiae on a fingerprint, a record format for containing the minutiae data, and optional extensions for ridge count and core/delta information.	Published
	INCITS Project 1564-D: Information technology - Finger Minutiae Format for Data Interchange Amendment 1	This amendment to INCITS 378-2004 will resolve two topics of concern that it is not sufficiently interoperable or precise regarding its conformance requirements. One objective of this project will be to evaluate such concerns and develop revisions in the standard that will resolve them. A second objective of this project will be to develop technical changes that may result in higher levels of interoperability.	Under Development: Working Draft (Revision will be proposed in June. If it passes, the Amendment will be withdrawn)
	ISO/IEC 19794-2 Biometric Data Interchange Formats - Part 2: Finger Minutiae Data	This standard specifies a concept and data formats for representation of fingerprints using the fundamental notion of minutiae. It is generic, in that it may be applied and used in a wide range of application areas where automated fingerprint recognition is involved. ISO/IEC 19794-2:2005 contains definitions of relevant terms, a description of how minutiae shall be determined, data formats for containing the data for both general use and for use with cards, and conformance information.	Published
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 2: Fingerprint Minutia Conformance Test Methodology	This standard project will establish a framework and define test requirements and guidelines for a Conformance Testing Methodology to determine conformity of products and services that utilize the ANSI INCITS 378-2004 standard.	Under Development: Working Draft

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	ANSI INCITS 377-2004 Finger Pattern Based Interchange Format	This standard specifies an interchange format for the exchange of pattern-based fingerprint recognition data. It describes the conversion of a raw fingerprint image to a cropped and down-sampled finger pattern followed by the cellular representation of the finger pattern image to create the finger-pattern interchange data.	Published
	INCITS Project 1563-D: Information technology - Finger Pattern Based Data Interchange Format Amendment 1	This amendment to INCITS 377-2004 will resolve a topic of concern that the existing standard is not sufficiently interoperable. One objective of this project will be to evaluate such concerns and develop interpretive and technical changes as an amendment to the standard.	Under Development: Working Draft (Revision will be proposed in June. If it passes, the Amendment will be withdrawn)
	ISO/IEC Project 19794-3: Biometric Data Interchange Formats – Part 3: Finger Pattern Spectral Data	This part of ISO/IEC 19794 specifies the interchange format for the exchange of spectral (pattern) based fingerprint data. This proposed standard allows the exchange of local or global spectral data derived from a fingerprint image without the exchange of the entire image.	Under Development: Final Draft International Standard
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 3: Conformance Testing for INCITS 377, Finger Pattern Based Data Interchange Format	This document describes a two-step conformance test with the ANSI-INCITS 377-2004 “Finger Pattern Data Interchange Format” standard. It provides some general guidelines for conformance testing and then defines the specific assertions that must be checked in each step.	Under Development: Working Draft (Public Review)
	ISO/IEC Project 19794-8: Biometric data interchange formats - Part 8: Finger Pattern Skeletal Data	This Standard specifies the interchange format for the exchange of pattern-based skeletal fingerprint recognition data. It allows for the extraction of both spectral information (orientation, frequency, phase, etc.) and features (minutiae, core, ridge count, etc.).	Under Development: Final Committee Draft

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<b>Face</b>	ANSI INCITS 385-2004 Face Recognition Format for Data Interchange	This standard specifies definitions of photographic environment, subject pose, focus, etc.) properties, digital image attributes and a face interchange format for relevant applications, including human examination and computer automated face recognition.	Published
	INCITS Project 1565-M: Information technology - Face Recognition Format for Data Interchange Revision 1	The proposed revision is intended to incorporate the changes to the face recognition format standard that were developed in the course of work on the 3D Face amendment project 1565-D. The changes that have been developed as a separate document should now be incorporated in the text of the standard to produce version 2.0.	New Project Proposal
	ISO/IEC 19794-5 Biometric Data Interchange Formats - Part 5: Face Image Data	This standard specifies scene, photographic, digitization and format requirements for images of faces to be used in the context of both human verification and computer automated recognition. The format is designed to allow for the specification of visible information discernable by an observer pertaining to the face, such as gender, pose and eye color.	Published
	ISO/IEC 19794-5 Biometric Data Interchange Formats - Part 5: Face Image Data – Amendment 1 - Conditions for Taking Photographs for Face Image Data	This amendment provides expert guidance for the design of photographic studios and photo booths and, as such, it supplements the information provided in the standard and Annex A. It also provides guidance on printing quality and on scanning printed face photographs.	Proposed Draft Amendment
	ISO/IEC 19794-5 Biometric Data Interchange Formats - Part 5: Face Image Data – Amendment 2: 3 Dimensional Face Image Data Interchange Format	This amendment of ISO/IEC 19794-5 is intended to establish a data interchange format for storing 3D human face images . To achieve this, several new image types are introduced, that are a combination of 2D facial images and associated 3D range information.	Under Development: Working Draft

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Category of Standards	Standard Name	Description	Status
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 5: Conformance Testing Methodology for INCITS 385-2004 Face Image Interchange Format	The standard project would establish the specifications of the framework, concepts, methodology for testing, and criteria to be achieved to claim conformance to INCITS 385 - 2004, Information Technology - Face Image Interchange Format. The proposed standard will include specification conformance test procedures and a critical set of test assertions useful to test the conformity requirements of INCITS 385-2004.	Under Development: Working Draft
	ISO/IEC Project 19794-12 Biometric Data Interchange Formats - Part 12: Face Identity Data	This proposed work item will develop a feature based interchange format for face identity data that can contain the face identity data extracted by not only MPEG-7 (video) but also other face recognition technologies.	New Work Item Proposal
Iris	ANSI INCITS 379-2004 Iris Image Interchange Format	This standard describes a format for the exchange of iris image information. It contains a definition of attributes, a data record format, sample records and conformance criteria. Two alternative formats for iris image data are described; one based on a cartesian coordinate system and the other on a polar coordinate system.	Published
	ISO/IEC 19794-6 Biometric Data Interchange Formats - Part 6: Iris Image Data	This standard specifies two alternative image interchange formats for biometric authentication systems that utilize iris recognition. The first is based on a rectilinear image storage format and the second format is based on a polar image specification	Published
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 6: Conformance Testing Methodology for INCITS 379-2004, Iris Image Interchange Format	The proposed standard would establish the specifications of the framework, concepts, methodology for testing, and criteria to be achieved to claim conformance to INCITS 379 - 2004, Information Technology - Iris Image Interchange Format.	Public Review

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<b>Other Modalities</b>	ANSI INCITS 396-2005 Hand Geometry Format for Data Interchange	This standard specifies an interchange format for the exchange of hand geometry data in a silhouette format. It defines the content, format, and units of measurement for such information. This standard is intended for those identification and verification applications that require the use of an interoperable hand geometry template.	Published
	ISO/IEC Project 19794-10: Biometric Data Interchange Formats – Part 10: Hand Geometry Silhouette Data	This standard specifies a data record interchange format for storing, recording, and transmitting the information from a hand silhouette within a CBEFF data structure. This proposed standard could be used for the exchange of hand geometry data.	Under Development: Final Committee Draft
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 10: Conformance Testing Methodology for INCITS 396:2005 – Hand Geometry Interchange Format	The proposed standard would establish the specifications of the framework, concepts, methodology for testing, and criteria to be achieved to claim conformance to INCITS 396:2005, Information Technology – Hand Geometry Interchange Format.	Approved Project
	INCITS Project 1797-D - Keystroke Dynamics Format for Data Interchange	This standard defines a method of representing keystroke dynamics information for the purposes of identifying an individual. It defines the set of data elements used to describe a set of keystrokes or other data input, and a record format for containing the keystroke dynamic data.	Under Development: Working Draft (Public Review)
	ANSI INCITS 395-2005 Biometric Data Interchange Formats – Signature/Sign Data	This Standard specifies a data interchange format for representation of digitized sign or signature data, for the purposes of biometric enrollment, verification or identification through the use of Raw Signature/Sign Sample Data or Common Feature Data. The data interchange format is generic, in that it may be applied and used in a wide range of application areas where electronic signs or signatures are involved. No application-specific requirements or features are addressed in this standard.	Published
	ISO/IEC Project 19794-7: Biometric Data Interchange Formats – Part 7: Signature/Sign Time Series Data	This part of ISO/IEC 19794 specifies a concept and data interchange format for dynamic signature/sign behavioral data captured in the form of a time series	Under Development: Final

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		using devices such as digitizing tablets or advanced pen systems. This part of ISO/IEC 19794 contains definitions of relevant terms, a description of what data is captured, a data format for containing the data alongside examples of record contents and best practice in capture.	Committee Draft (Plan to merge with part 11 and progress to FDIS in London)
	ISO/IEC Project 19794-11: Biometric data interchange formats – Part 11: Signature/Sign Processed Dynamic Data	This standard specifies a concept and data interchange format for signature/sign dynamic data captured in form of time series using e.g. digitizing tablets or advanced pen devices. The standard contains definitions of relevant terms, a description of what data is captured, a data format for containing the data alongside examples of record contents and best practice in capture.	Approved Project (US plans to kill project)
	ISO/IEC Project 19794-9: Biometric Data Interchange Formats – Part 9: Vascular Image Data	This part of the ISO/IEC 19794 standard specifies an image interchange format for biometric person identification or verification technologies that utilize human vascular biometric images and may be used for the exchange and comparison of vascular image data.	Under Development: Final Committee Draft
	INCITS Project 1821-D Speaker Biometrics Format for Data Interchange	This draft standard will define a speaker biometric data interchange format for the exchange of speaker data. The standard will contain a specific definition of the fields of information to be included in the format in order to effectively communicate about speaker recognition transactions and a data record format for storing and transmitting the speaker information and data..	Under Development: Working Draft
Multi-Biometrics and Data Interchange Frameworks	INCITS Project 1790-D Fusion Information Format for Data Interchange	This standard specifies several fusion information records that contain statistical information intended to facilitate interoperable, modular, score-level fusion of biometric systems.	Under Development: Working Draft
	INCITS Project 1538-M BioAPI Specification (Version 1.1) - Amendment 1: Support for Biometric Fusion	This Amendment to INCITS 358 adds support for biometric fusion to the standard. This amendment extends the API and the SPI by specifying new functions and new values of existing data types.	Under Development: Working Draft (PR planned for June)
	ISO/IEC Proposed Draft Technical	This technical report contains description of and analysis of current	Under

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	Report 24722: Multi-Modal and Other Multi-Biometric Fusion	practice on multimodal and other multi-biometric fusion, including (as appropriate) reference to more detailed description. This technical report also contains a description and explanation of high-level multi-biometric concepts to aid in the explanation of multi-biometric fusion approaches including: multimodal, multi-instance, multi-sensorial, multi-algorithmic, decision level, score level, and alternative fusion logic.	Development: Proposed Draft Technical Report
	ISO/IEC Project 19794-1: Biometric Data Interchange Formats – Part 1: Framework	This part of ISO/IEC 19794 is intended to describe the general aspects and requirements for defining biometric data interchange formats. It defines what is commonly applied for biometric data formats, i.e. the standardization of the common content, meaning, and representation of biometric data formats of biometric types considered in the specific parts of the multipart standard.	Under Development: Final Committee Draft
	ANSI/NIST ITL 1-2006 Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information	This project is a revision of the ANSI/NIST ITL 1-2000 standard. Included in this revision is work to include additional modalities and align the standard with INCITS M1 and international IT and biometric standards. Additionally, this work may include efforts to develop an extensible XML version of this exchange format.	Under Development: Work in progress
	INCITS Project 1749-D Conformance Testing Methodology Standard for Biometric Data Interchange Format Standards – Part 1: Generalized Conformance Testing Methodology	This part of the multi-part standard on data interchange formats conformance testing specifies the concepts, test types and test methodologies for conformance testing of biometric systems claiming conformance to data interchange format standards produced by INCITS M1.	Public Review
	ISO/IEC Proposed New Work Item [NWI] "Multi-part Conformance Test Standard for Data Formats"	<b>TBD</b>	New Work Item Proposal (Approved by M1)

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Transmission	Electronic Fingerprint Transmission Specification (v7.1)	The purpose of this document is to specify certain requirements to which agencies must adhere to communicate electronically with the FBI's Integrated Automated Fingerprint Identification System (IAFIS). This specification is based upon ANSI/NIST ITL 1-2000 and covers the IAFIS electronic transmissions involving fingerprints.	Published
	Electronic Biometric Transmission Specification (v1.1)	This specification describes customizations of the Federal Bureau of Investigation (FBI) Electronic Fingerprint Transmission Specification (EFTS) transactions that are necessary to utilize the Department of Defense (DoD) Automated Biometric Identification System (ABIS).	Published
	Global Justice XML Data Model (Global JXDM)	The Global JXDM is an XML standard designed specifically for criminal justice information exchanges, providing law enforcement, public safety agencies, prosecutors, public defenders, and the judicial branch with a tool to effectively share data and information in a timely manner. The Global JXDM removes the burden from agencies to independently create exchange standards, and because of its extensibility, there is more flexibility to deal with unique agency requirements and changes.	Published
Technical Interfaces	ANSI INCITS 358-2002 BioAPI Specification (Version 1.1)	This standard provides a high-level generic biometric authentication model; one suited for any form of biometric technology. It covers the basic functions of Enrollment, Verification, and Identification, and includes a database interface to allow a biometric service provider (BSP) to manage the Identification population for optimum performance.	Published

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	ISO/IEC Project 19784-1: BioAPI – Biometric Application Programming Interface – Part 1: BioAPI Specification	This International Standard, the BioAPI specification, provides a high-level generic biometric authentication model suited to most forms of biometric technology. No explicit support for multimodal biometrics is currently provided. An architectural model is described which enables components of a biometric system to be provided by different vendors, and to interwork through fully-defined Application Programming Interfaces (APIs).	Under Development: Final Draft International Standard
	ISO/IEC Project 19784-1: BioAPI – Biometric Application Programming Interface – Part 1: BioAPI Specification, Amendment 1: BioGUI Specification	The functionality specified in this Amendment enables an application to control the display of graphics at enrollment, verification, and identification, as an alternative to using the graphical user interface provided by BSPs. It is expected to better meet the needs of biometric applications that wish to have full control of the user interface during enrollment, verification, and identification.	Proposed Draft Amendment (recommendation to advance to FPDAM)
	ISO/IEC Project 19784-2: Biometric Application Programming Interface (BioAPI) – Part 2: Biometric Archive Function Provider Interface	This part of the BioAPI Standard specifies the interface to an archive Biometric Function Provider (BFP). An archive BFP is responsible for the storage and management of BIRs.	Under Development: Final Draft International Standard
	ISO/IEC Project 19784-3: Biometric Application Programming Interface (BioAPI) – Part 3: BioAPI Lite	This International Standard will specify a reduced (but BioAPI compatible) version of BioAPI. It will enable sensor devices to have a very simple interface to facilitate communication of embedded devices through a BioAPI compatible interface.	Under Development: Working Draft
	INCITS Project 1703-D Conformance Testing Methodology for ANSI INCITS 358-2002, BioAPI Specification	This standard specifies the concepts, framework, test methods, and criteria to be achieved to claim conformity of Biometric Service Providers to the BioAPI specification ANSI INCITS 358-2002.	Public Review

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	ISO/IEC Project 24709-1: Conformance Testing for BioAPI – Part 1: Methods and Procedures	This International Standard defines a conformance testing methodology for BioAPI as specified in ISO 19784-1. It specifies three conformance testing models that enable conformance testing of each component of BioAPI (an application, a framework, or a BSP). It also specifies a test assertion language that is used for the definition of test assertions. Actual test assertions for each of the BioAPI are defined in subsequent parts of this International Standard.	Under Development: Final Committee Draft
	ISO/IEC Project 24709-2: Conformance Testing for BioAPI – Part 2: Test Assertions for Biometric Service Providers	This part of ISO/IEC 24709 defines a number of test assertions written in the assertion language specified in ISO/IEC 24709-1. These assertions enable a user of this part of ISO/IEC 24709 (such as a testing laboratory) to test the conformance to ISO/IEC 19784-1 (BioAPI 2.0) of any biometric service provider (BSP) that claim to be a conforming implementation of that International Standard.	Under Development: Final Committee Draft
	ISO/IEC Project 24709-3: Conformance Testing for BioAPI – Part 3: Test Assertions for BioAPI Frameworks	This part of ISO/IEC 24709 will define a number of test assertions written in the assertion language specified in ISO/IEC 24709-1. These assertions enable a user of this part of ISO/IEC 24709 (such as a testing laboratory) to test the conformance to ISO/IEC 19784-1 (BioAPI 2.0) of any BioAPI frameworks that claim conformity to that standard.	Approved Project
	ISO/IEC Project 24709-4: Conformance Testing for BioAPI – Part 4: Test Assertions for Biometric Applications	This part of ISO/IEC 24709 will define a number of test assertions written in the assertion language specified in ISO/IEC 24709-1. These assertions enable a user of this part of ISO/IEC 24709 (such as a testing laboratory) to test the conformance to ISO/IEC 19784-1 (BioAPI 2.0) of any BioAPI applications that claim conformity to that standard.	Approved Project
	INCITS Project [New Project] "BioAPI for Java"	The proposed standard will specify an interface of a Java BioAPI framework and Java BioAPI BSP which will mirror the corresponding components specified in ISO/IEC 19784-1. Therefore, the proposed standard will be nearly identical to ISO/IEC 19784-1, with the only difference being the programming language of the interfaces.	Approved Project

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	INCITS Proposed New Project [New Project] "BioAPI and support for tenprint capture devices"	The proposed standard provides a mechanism and supplemental guidance on the use of ISO/IEC 19784-1, BioAPI Specification, a software interface standard, for the purpose of performing a tenprint fingerprint capture operation.	Approved Project
	ANSI INCITS 398-2005 [NISTIR 6529-A] Common Biometric Exchange Formats Framework (CBEFF)	This standard describes a set of data elements necessary to support biometric technologies in a common way. These data elements can be placed in a single file used to exchange biometric information between different system components or between systems. The result promotes interoperability of biometric-based application programs and systems developed by different vendors by allowing biometric data interchange.	Published
	ANSI INCITS 398-2005 - Common Biometric Exchange Formats Framework (CBEFF) – Revision 1	The proposed revision will correct technical errors reported in the alleged defect report as M1document M1/05-0328, plus other technical errors and modifications noted by users of the standard, as well as clarifications to further help users and developers of these data structures.	Under Development: Working Draft
	ISO/IEC Project 19785-1: Common Biometric Exchange Formats Framework – Part 1: Data Element Specification	The Common Biometric Exchange Formats Framework (CBEFF) promotes interoperability of biometric-based applications and systems by specifying standard structures for biometric information records (BIRs) and a set of abstract data elements and values that can be used to create the header part of a CBEFF-compliant BIR. The primary purpose of Part 1 of this International Standard is to define these abstract data elements.	Under Development: Final Draft International Standard
	ISO/IEC Project 19785-2: Common Biometric Exchange Formats Framework – Part 2: Procedures for the Operation of the Biometrics Registration Authority	This Part of the CBEFF International Standard supports such exchanges by providing unambiguous identification of biometric organizations, formats and products. It specifies the procedures to be followed by the Biometric Registration Authority in preparing, maintaining, and publishing registers of identifiers for biometric organizations, CBEFF patron formats, BDB formats, security block formats, and biometric products.	Under Development: Final Draft International Standard
	ISO/IEC Project 19785-3: Common Biometric Exchange Formats Framework	This International Standard specifies and publishes registered CBEFF patron formats (see ISO/IEC 19785-1), and specifies their	Under Development:

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	– Part 3: Patron Format Specifications	registered CBEFF patron format identifiers (see ISO/IEC 19785-2) and resulting full ASN.1 Object Identifiers.	Final Committee Draft (FDIS June)
	ISO/IEC Project 24708: BioAPI Interworking Protocol (BIP)	This International project, the BioAPI Interworking protocol (BIP), specifies the syntax, semantics, and encodings of a set of messages to enable communication of BioAPI conformant components installed on different computers. These messages will allow a BioAPI-conforming application to request biometric operations in remote BioAPI-conforming biometric service providers (BSPs) and to be notified of events originating in those remote BSPs. It also specifies extensions to the architecture and behavior of the BioAPI framework (specified in ISO/IEC 19784-1) that support the creation, processing, sending, and reception of BIP messages.	Under Development: Committee Draft
	OASIS XML Common Biometric Format (XCBF) 1.1	This specification defines a common set of secure XML encodings for the patron formats specified in CBEFF, the Common Biometric Exchange File Format (NISTIR 6529). Much of the information included in this standard has been incorporated into a more recent standard, ANSI X9.84-2003.	Published
Application Profiles	NIST SP 800-76 - Biometric Data Specification for Personal Identity Verification	This document, Special Publication 800-76 (SP 800-76), is a companion document to FIPS 201. It describes technical acquisition and formatting specifications for the biometric credentials of the PIV system, including the PIV Card itself. The primary design objective behind these particular specifications is high performance universal interoperability.	Published
	ANSI INCITS 383-2004 Biometric Profile – Interoperability and Data Interchange – Biometrics-Based Verification and Identification of Transportation Workers	This standard specifies a biometric profile for transportation workers. It defines a set of base standards and criteria for applying those standards in applications where tokens are used for access control and identification of employees. This standard is intended for use in the transportation industry and other industries where identification and verification of employees is necessary to ensure safety and integrity within the work environment.	Published

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	INCITS Project 1566-D: INCITS 383 - Biometric Profile - Interoperability and Data Interchange – Biometrics Based Verification and Identification of Transportation Workers - Revision 1	This revision will correct technical errors discovered during the publication cycle or during implementation and permit the extension of the existing standard to allow the addition of new technology for this application.	Public Review
	ANSI INCITS 394-2004 Application Profile for Interoperability, Data Interchange and Data Integrity of Biometric-Based Personal Identification for Border Management	This standard specifies a biometric profile for border management applications. It defines a set of base standards and criteria for applying those standards in applications that use biometrics to authenticate the identity of non-citizens as they enter, stay in, and leave the United States.	Published
	INCITS Project 1676-D Biometric Profile - Interoperability and Data Interchange - DoD Implementations	This standard specifies a biometric profile for military applications. It defines a set of base standards and criteria for applying those standards in applications which process and store biometric data on Enemy Prisoners of War (EPW), detainees, internees, and persons of interest with respect to national security.	Public Review
	INCITS Project 1706-D Application Profile for Commercial Biometric Access Control	This standard specifies a biometric profile for access control applications. It defines a set of base standards and criteria for applying those standards in applications that use biometrics to authenticate the identity of users requesting access to a facility.	Public Review
	INCITS Project 1575-D Biometric Profile – Interoperability and Data Interchange – Point-of-Sale Biometrics-Based Verification and Identification	This Standard specifies an application profile for support of identification and verification of consumers at the point of sale, through the use of biometric data collected both during a prior enrollment process and at the time of the transaction. The biometric aspects of data formats, biometric enrollment, API and other protocols, and privacy and security are specified.	Public Review
	ISO/IEC Project 24713-1: Biometric Profiles for Interoperability and Data Interchange – Part 1: Biometric System Reference Architecture	This part of ISO/IEC 24713 is intended to form the reference architecture part of the multipart standard on biometric profiles for interoperability and data interchange. It will describe a schema for the use of a number of biometric standards. This part of ISO/IEC 24713 is to be used as a reference guide for the implementation of a generic biometric system or a profile-standardized system.	Under Development: Final Committee Draft

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	ISO/IEC Project 24713-2: Biometric Profiles for Interoperability and Data Interchange – Part 2: Physical Access Control for Employees at Airports	This part of ISO/IEC 24713 specifies the application profile including necessary parameters and interfaces between function modules. (i.e. BioAPI based modules and an external interface) in support of token-based biometric identification and verification of employees, at local access points (i.e. doors or other controlled entrances) and across local boundaries within the defined area of control in an airport. The token is expected to contain one or more reference biometrics and one or more operational biometrics, or both. This standard includes recommended practices for enrolment, watch list checking, duplicate issuance prevention, and verification of the identity of employees at airports. It also describes architectures and business processes appropriate to the support of token-based identity management in the secure environment of an airport.	Under Development: Committee Draft
	ISO/IEC Project 24713-3: Biometric Profiles for Interoperability and Data Interchange – Part 3: Biometric Based Verification and Identification of Seafarers	This International Standard specifies a biometric profile including necessary parameters and interfaces between function modules. (i.e. BioAPI based modules and an external interface) in support of biometric identification and verification of seafarers. The domain of applicability may extend to other situations where an interoperable biometrics based identity document is required, but the main focus is on the use of biometrics on a Seafarers' Identity Document (SID).	Under Development: Working Draft
	ILO SID-0002 Finger Minutiae-Based Biometric Profile for Seafarers' Identity Documents	This document, ILO SID-0002, Finger minutiae-based biometric profile for seafarers' identity documents, gives guidelines for incorporation of minutiae-based fingerprint biometric technology into the SID in accordance with the Seafarers Identity Documents Convention (Revised), 2003 (No. 185).	Published
<b>Quality</b>	ISO/IEC Project 29794-1: Biometric Sample Quality Standard – Part 1: Framework	This project will result in a multi-part International Standard that specifies the derivation, expression and interpretation of biometric sample quality scores and data, and interchange of these scores and data via the multipart ISO/IEC 19794 Biometric Data Interchange Format Standard.	Under Development: Working Draft

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	ISO/IEC Project 29794-4: Biometric Sample Quality – Fingerprint Sample Quality	The purpose of this part 4 of ISO/IEC 29794 is to define and specify methodologies for objective, quantitative quality score expression, interpretation and interchange for fingerprint images.	Under Development: Working Draft
	ISO/IEC Project 29794-5: Biometric Sample Quality – Part 5: Face Image Data	The purpose of this part 5 of ISO/IEC 29794 is to define and specify methodologies for objective, quantitative quality score expression, interpretation and interchange for face images.	Approved Project
	INCITS Project 1672-D Biometric Sample Quality Standard	This Biometric Sample Quality Standard serves to establish terms and definitions that are useful in the specification, use, and test of quality metrics. It also defines the purpose, intent and interpretation of biometric quality scores.	Public Review (LB withdrawn per editor request)
Web Services	INCITS Project 1823-D – Biometric Identity Assurance Services (BIAS)	This project defines biometric services used for identity assurance and invoked over a services-based framework. It is intended to provide a generic set of biometric (and related) functions and associated data definitions to allow remote access to biometric services.	Under Development: Working Draft
	OASIS Biometric Identity Assurance Services (BIAS)	This project is identical to INCITS Project 1823-D and was initiated to jointly develop the standard with input from M1 and OASIS.	Under Development: Working Draft
Security	ANSI X9.84-2003 Biometric Information Management and Security for the Financial Services Industry	This Standard specifies the minimum security requirements for effective management of biometric data. 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; Application of biometric technology for internal and external, as well as logical and physical access control.	Published
	ISO/TC68/SC 2 Project 19092-1 Financial Services - Biometrics - Part 1: Security Framework	This International 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 part of ISO 19092 also describes the architectures for implementation, specifies	Under Development: Draft International Standard

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		the minimum security requirements for effective management, and provides control objectives and recommendations suitable for use by a professional practitioner.	
	ISO/TC68/SC 2 Project 19092-2 Financial Services - Biometrics - Part 2: Cryptographic Requirements	This part of the Standard describes the syntax of biometric objects and the cryptographic requirements to protect those objects when implementing biometrics for authentication in financial services. Encoding examples are provided.	Under Development: Committee Draft
	ISO/IEC Project 19792 Security Techniques-A Framework for Security Evaluation and Testing of Biometric Technology	This International standards project addresses the specific aspects which shall be considered during a security evaluation or testing process of a biometric verification system. Thereby this standard addresses only those aspects of a security evaluation that distinguish biometric systems from IT systems in general.	Under Development: Working Draft
	ISO/IEC Project 24745 Security Techniques-Biometric Template Protection	This international Standard describes the security techniques for Biometric Template Protection. This Standard focuses on Privacy Enhanced Techniques for Biometric Template Generation.	Under Development: Working Draft
	ISO/IEC Project 24761 Security Techniques- Authentication Context for Biometrics	This International Standards project defines the structure and the data elements of Authentication context for biometrics (ACBio). The structure design is based on the five-sub process-model of biometric verification which consists of data capture, signal processing, storage, comparison, and decision as well as the concept of biometric process unit, the subject that executes sub process(es) of a biometric verification with a uniform level of security performance. This project also specifies cryptographic syntax that can be used to give biometric enrolment and processing context information to the verifier of biometric verification.	Under Development: Working Draft
	ITU-T Recommendation X.1081 – The Telebiometric Multimodal Model – A Framework for the Specification of Security Aspects of Telebiometrics	<b>TBD</b>	Under Development: Work in progress

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Category of Standards	Standard Name	Description	Status
<b>Performance Testing</b>	ANSI INCITS 409.1-2005 Biometric Performance Testing and Reporting – Part 1: Principles and Framework	This standard addresses testing the accuracy of identification and verification devices, algorithms, and systems. This part is intended to summarize the other parts of the standard. An overview of the primary testing protocols, biometric applications, and performance metrics is presented. It also provides guidance on data analysis techniques, recording of results, and performance reporting measures available.	Published
	ANSI INCITS 409.2-2005 Biometric Performance Testing and Reporting – Part 2: Technology Testing and Reporting	This standard specifies methods for performance testing of biometric systems and devices. It constitutes a specialization of a biometric testing framework standard in that it is concerned only with the offline use of stored (i.e., previously captured) biometric samples, and not the interaction of human subjects with a biometric sensor. The standard covers: Comparative or absolute testing of performance of biometric algorithms, components, or systems; Comparison of biometric data sets; Prediction of elements of deployed online performance; Assessment of performance available from complex data samples including repeated sample and multimodal data.	Published
	ANSI INCITS 409.3-2005 Biometric Performance Testing and Reporting – Part 3: Scenario Testing and Reporting	This standard specifies the requirements for scenario-based biometric testing and reporting. The goal of scenario testing is to determine the overall system performance in a prototype or simulated application. Testing is carried out on a complete system in an environment that models a real-world target application of interest.	Published
	INCITS Project 1602-D Biometric Performance Testing and Reporting – Part 4: Operational Testing Methodologies	This standard provides the test planning, test execution and test reporting requirements that must be followed during the biometric system’s operational test. The goal is to determine if the performance of the complete biometric system meets the requirements of that specific application environment for a target population.	Public Review
	INCITS Project 1602-D Biometric Performance Testing and Reporting – Part 5: Framework for Testing and Evaluation of Biometric Subsystems for	This standard specifies a framework for testing and reporting of biometric subsystem used in applications supporting access control. It does not specify application requirements but only specifies the biometric component of the access control system. It specifies the	Under Development: Working Draft

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Category of Standards	Standard Name	Description	Status
	Access Control	environment that testing will be performed in, including optional testing environments, and the means by which testing will be performed and how the results will be reported.	
	<del>INCITS Project 1602 D Part 6– Performance and Interoperability Testing of Implementations claiming conformance to Biometric Data Interchange Format Standards</del>	<del>The proposed standard will define tests in which sample data is acquired, processed, exchanged, and matched by several vendors. The standard will establish protocols and metrics for the assessment of performance and interoperability.</del>	Project withdrawn
	ISO/IEC Project 19795-1: Biometric Performance Testing and Reporting – Part 1: Principles and Framework	This part of ISO/IEC 19795 is applicable to empirical performance testing of biometric systems and algorithms through analysis of the matching scores and decisions output by the system, without detailed knowledge of the system’s algorithms or of the underlying distribution of biometric characteristics in the population of interest.	Under Development: Final Draft International Standard
	ISO/IEC Project 19795-2: Biometric Performance Testing and Reporting – Part 2: Testing Methodologies for Technology and Scenario Evaluation	This part of ISO/IEC 19795 provides requirements and recommendations on data collection, analysis, and reporting specific to two primary types of evaluation: technology evaluation and scenario evaluation. It specifies requirements for development and descriptions of protocols for technology and scenario evaluations.	Under Development: Final Committee Draft
	ISO/IEC Working Draft Technical Report 19795-3: Biometric Performance Testing and Reporting – Part 3: Modality-Specific Testing	This Technical Report is intended to describe the variations in testing methodologies due to modality dependent characteristics. The purpose of this document is to present and define methods for determining, how to develop a technical performance test, given a specific biometric modality.	Under Development: Working Draft Technical Report
	ISO/IEC Project 19795-4: Biometric Performance Testing and Reporting – Part 4: Performance and Interoperability Testing of Data Interchange Formats	This standard defines tests to specifically address absolute performance, sufficiency and interoperability available from biometric data formatted to comply with established standards, particularly those developed in the various parts of ISO/IEC 19794. However, because this standard references interchange formats generically, by referencing only their black box generation and use, it also applies	Under Development: Committee Draft

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Category of Standards	Standard Name	Description	Status
		to other open standards.	
	ISO/IEC Project 19795-5: Biometric Performance Testing and Reporting – Part 5: Performance of Biometric Access Control Systems	The purpose of this International Standard is to present the requirements and best scientific practices for conducting scenario performance testing and evaluation of biometric devices for access control systems.	Under Development: Working Draft
	ISO/IEC Project 19795-6: Biometric Performance Testing and Reporting – Part 6: Testing Methodologies for Operational Evaluation	This standard provides the test planning, test execution and test reporting requirements that must be followed during the biometric system’s operational test. The goal is to determine if the performance of the complete biometric system meets the requirements of a specific application environment for a target population. A secondary goal is to document the uncontrolled population and environmental parameters that affect system performance (that could be introduced into scenario evaluations to reduce the need for performing costly operational tests).	Proposed New Work Item (Approved by M1)
	INCITS Technical Report 1627-S Evaluating Multi-Modal Biometric Systems	Although this was approved as a study project, it has not progressed as a technical report or standard. That work has been rolled into various other standards, including the SC 37 technical report on multi-modal fusion	Published
Other Standards and Normative Documents	ISO/IEC Project 24714-1 Proposed Draft Technical Report on Cross-Jurisdictional and Societal Aspects of Implementation of Biometric Technologies – Part 1: Guide to the Accessibility, Privacy and Health and Safety Issues in the deployment of Biometric Systems for Commercial Application	This Technical Report offers guidance on the design and development of systems using biometrics with regards to societal norms and legal requirements in the use of biometric data between different jurisdictions, in particular as regards privacy and personal data protection, and the usability of biometrics by the population with regards to health and safety.	Under Development: Proposed Draft Technical Report
	ISO/IEC Project 24714-2 Cross-Jurisdictional and Societal Aspects of Implementation of Biometric Technologies - Part 2: Practical application to specific contexts	This document is based on ISO/IEC 24714-1 but provides a more detailed approach to cross-jurisdictional and societal aspects of biometrics. It identifies and analyzes issues with reference to a specified selection of biometric applications. It also attempts to analyze real-world applications, on the basis of the same parameters selected for the technologies description.	Under Development: Working Draft

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	ISO/IEC Proposed Draft Technical Report 24741 Biometrics Tutorial	This Technical Report provides a tutorial on biometrics. It contains a description of the architecture of biometric processes and defines those processes. An annex provides further details of the areas of biometrics standardization that are being progressed by the ISO. A further annex provides the a list of vocabulary terms and definitions used in these Standards.	Under Development: Proposed Draft Technical Report
	ISO/IEC SC37 Standing Document 2, version 5: Harmonized Biometric Vocabulary	The purpose of this document is to provide a systematic description of the concepts in the subject field of biometrics and to clarify the use of the terms in this subject field. The compilation of this vocabulary provides a forum for analyzing, discussing and coordinating key concepts found in ISO/IEC JTC1 SC 37 standards.	Under Development: Working Draft
	INCITS M1 Standing Document 4 (SD4): Report on Issues for Harmonizing Conformity Assessment to Biometric Standards	This report identifies and defines the types of activities that may occur in Conformity Assessment schemes. It also discusses various kinds biometric standards which M1 could develop for use in biometric standards based conformance testing programs. It provides guidance on a generalized taxonomy for conformance testing methodology standards, recommendations to M1 on best practices for supporting conformance testing to biometric standards, and suggestions for harmonizing biometric standards based conformance testing programs.	Published / Standing Document
	ISO/IEC 7816-11:2004 Identification Cards - Integrated circuit cards - Part 11: Personal verification through biometric methods	This international standard specifies the usage of interindustry commands and data objects related to personal verification through biometric methods in integrated circuit cards. The interindustry commands used are defined in ISO/IEC 7816-4. The data objects are partially defined in this International Standard, partially imported from ISO/IEC 19785-1. This standard also presents examples for enrollment and verification and addresses security issues.	Published