

# NIST ITL Biometric Standards Program

*Fernando Podio  
Program Manager,  
NIST ITL Biometric Standards Program  
Computer Security Division  
NIST/ITL*

# Overview

- Program Goals
- NIST ITL Strategy and Tactics to Accelerate Biometric Standards Development
- Technical Implementations in Support of Documentary Standards



# NIST History in Biometric Standardization

- For decades NIST has been involved with the law enforcement community in biometric testing and standardization:
  - (eg., *ANSI/NIST-ITL 1-2000 Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information*).
- In the past seven years, NIST has intensified its work in biometric standardization working with consortia & other fora.
- Post 9/11, NIST championed the establishment of formal national and international biometric standards development bodies as the best environments to support deployment of standards based solutions and to **accelerate the development of the required voluntary consensus standards.**



**M1 - Biometrics**



**SC 37 - Biometrics**

# User Requirements and Strategy

## ***User requirements:***

- Strong personal authentication for Homeland Defense and other applications
- High performance, interoperable systems
- User requirements based on timely biometric open system standards
- Avoid later costly migration from proprietary systems to standard based solutions



## ***Strategy on National and International Standards Development Efforts:***

- ✓ Support the users/industry in accelerating the development of biometric standards.
- ✓ Work in close coordination with other government programs.
- ✓ Help establish and organize efficient standards development bodies.
- ✓ Focus on international standards adoption as the ultimate goal, national standards can usually be developed faster – do so (graceful migration planned).
- ✓ Research and develop technical implementations in support of documentary standards (e.g., conformance, performance, interoperability testing).
- ✓ Support the possible establishment of users' testing programs (e.g., conformity assessment programs to validate conformance to the biometric standards).

# Program Tactics

## ***Tactics:***

- Work in coordination with Government users and others (biometrics/security industry/academia).
- Leverage from work of biometric standards “incubators” (e.g., Biometric Consortium, BioAPI Consortium) & support fast processing of their work:
  - ✓ BioAPI specification developed by the BioAPI Consortium approved in 2002 as American National Standard (INCITS 358).
  - ✓ Common Biometric Exchange Formats Framework (CBEFF) (NISTIR 6529 - A) developed by the NIST/BC Biometric WG approved in 2005 as an American National Standard (INCITS 398).
- Contribute to standard development bodies and the standard work with officers, technical editors and a number of technical experts from NIST/ITL.
- Push the envelope on technical quality and speed in standards development.



National Science &  
Technology Council  
Subcommittee on Biometrics

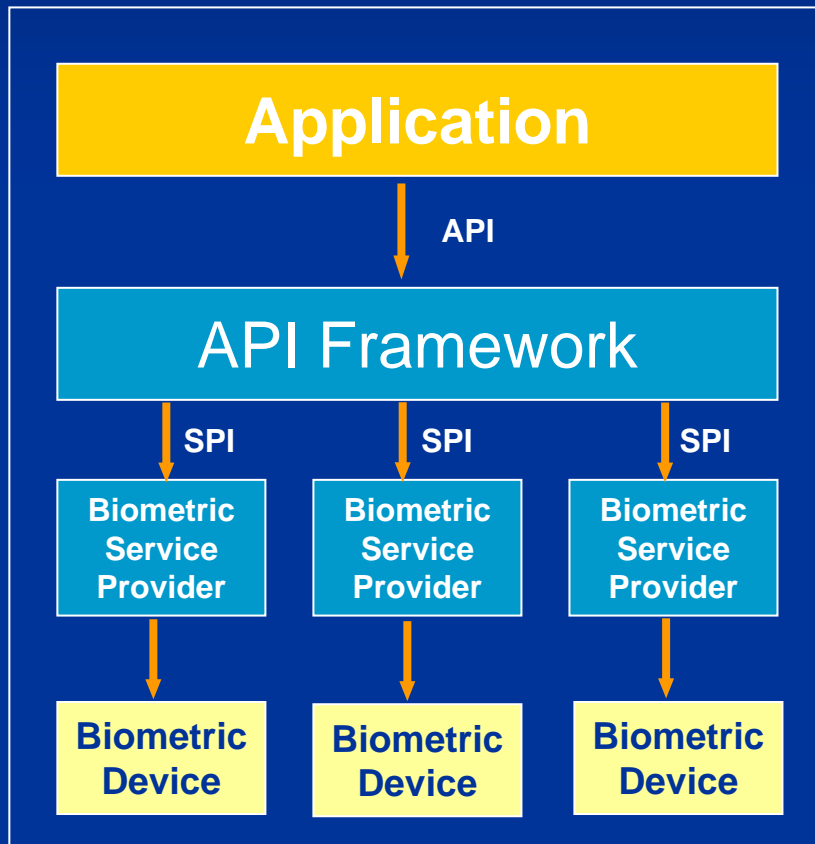


# Example of a Technical Implementation in Support of Documentary Standards

- Conformance testing
  - Standards based, high quality conformance testing leads to greatly increased levels of confidence in product conformance claims for developers & users.
  - It can also help ensure interoperability between standards-based products and systems.
- NIST ITL and the DoD Biometrics Management Office (BMO) have been working in close collaboration in the development of biometric standards and supporting testing tools.
- One example is the development of implementations of Biometric Application Programming Interface (BioAPI) Conformance Test Suites (CTSs).

# An Open Systems Interface Standard for Biometric Integration

A biometric API standard defines a generic way of interfacing to a broad range of biometric technologies.



## Benefits:

- Easy substitution of biometric technologies
- Use of biometric technology across multiple applications
- Easy integration of multiple biometrics using the same interface
- Rapid application development - increased competition (tends to lower costs)

# The BioAPI Standard

- Original version developed by the BioAPI Consortium (completed in March 2001).
- Approved as American National Standard INCITS 358-2002 (February 2002).
- The international version (v 2.0) is in the last stages of development and it is expected to become an ISO standard at the end of 2005.
- Previous related implementations:
  - Linux Reference Implementation - sponsored by NIST
  - Unix/Solaris Ref Implementation - sponsored by IBG
  - WinCE Ref Implementation - sponsored by NBSP
  - JNI Wrapper - sponsored by GenSoft

These components were all developed by and/or funded by the sponsors based on a Memorandum of Understanding (MOU) with the **BioAPI Consortium**. Each is publicly available on the BioAPI Consortium's website (as well as on the sponsor's website in some cases).

# BioAPI Implementation and Adoption

- Thirty - three products are listed in the BioAPI Consortium web site as “conforming to BioAPI” (self claim of conformance at this time, perhaps not a complete list).
- Government RFPs requiring conformance to BioAPI:
  - DoD, GSA, FAA, TSA, Treasury, DOS, DHS
  - DHS projects requiring compliance include US VISIT, TWIC, and Registered Traveler.
- Inclusion in DoD IT Standards Registry (DISR)
- Inclusion in US biometric application profiles:
  - Trans. Worker (INCITS 383), Border Mgmt. (INCITS 394), Point of Sale (under development), DoD Application Profile (under development).

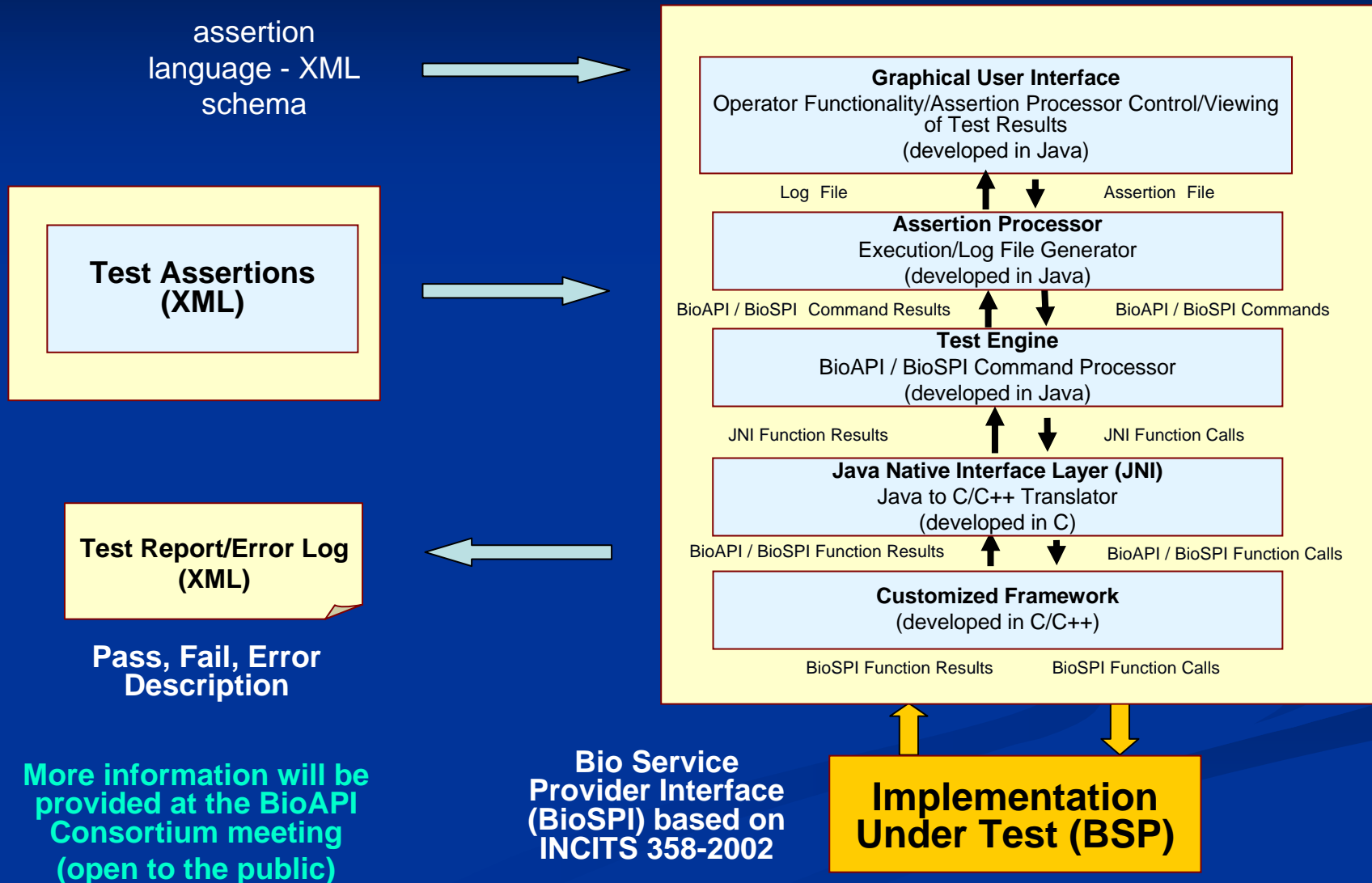
# BioAPI Conformance Test Suites (CTSs)

- For over a year NIST ITL and DoD BMO have been independently developing implementations of the BioAPI CTS.
- These test tools are being developed in support of:
  - users within DoD and other government agencies already requiring, or interested in requiring in the near future, that Biometric Service Providers (BSPs) conform to the BioAPI standard.
  - possible establishment of conformity assessment programs to validate conformance to the BioAPI standard and other emerging standards.
  - product developers interested in developing products conforming to voluntary consensus biometric standards by using the same test tools available to users.
- NIST ITL and DoD BMO are performing intensive testing of the initial versions of these CTSs in order to cross - validate the test results using a number of vendor BSPs claiming conformance to the BioAPI standard.

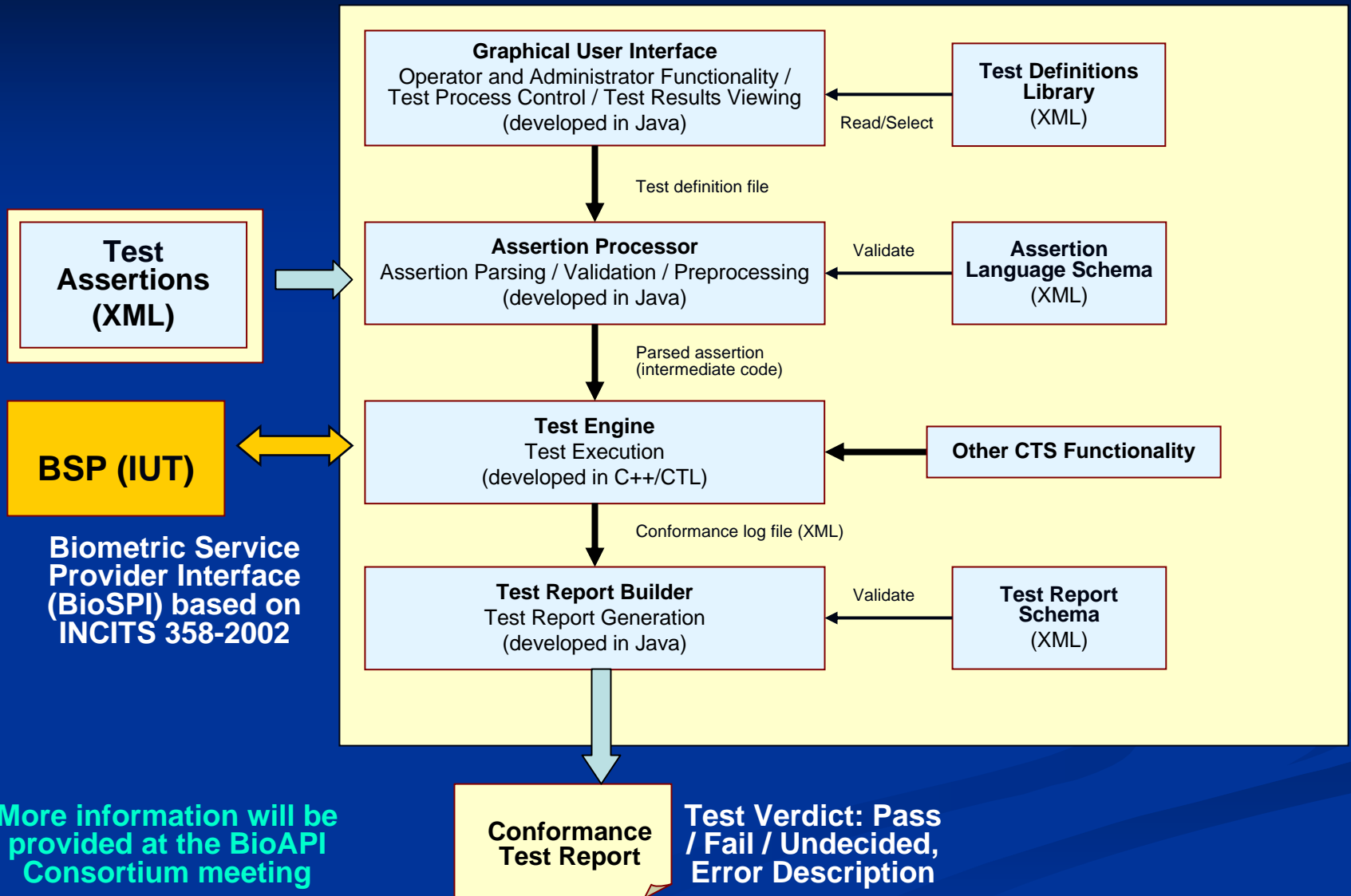
# BioAPI Conformance Test Suite (CTS)

- The initial CTS implementations were developed using concepts and principles specified in a draft conformance testing methodology standard for the BioAPI standard (INCITS 358-2002) under development in INCITS M1 - Biometrics.
- This standard project was sponsored by NIST, DoD BMO, the National Biometric Security Project (NBSP), Saflink Corp., and The Biometric Foundation (TBF).
  - Editor: Mark Jerde, TBF/Co - editor: Cathy Tilton, Saflink
- NIST ITL CTS implementation
  - Development co-sponsored by the National Biometric Security Project
  - Testing: NIST ITL / The Biometric Foundation
  - Main Developer: Saflink Corp
- DoD BMO CTS implementation
  - Developed and Tested by DoD BMO Support Contractors (Booz Allen Hamilton and OSS Nokalva)
  - The tool was also tested by the DoD Biometrics Fusion Center

# NIST ITL BioAPI CTS Architecture



# DoD BMO BioAPI CTS Architecture



More information will be provided at the BioAPI Consortium meeting (open to the public)

# Contact Information

Fernando Podio  
Computer Security Division  
NIST/ITL  
1 (301) 975 - 2947  
[fernando.podio@nist.gov](mailto:fernando.podio@nist.gov)

## Web sites:

- The Executive Office of the President of the United States National, Science & Technology Council, Subcommittee on Biometrics:  
<http://biometricscatalog.org/NSTCSubcommittee/default.asp>
- NIST ITL Biometric Resource Center: <http://www.nist.gov/biometrics>
- DoD Biometrics Management Office: <http://www.biometrics.dod.mil>
- INCITS M1: [http://www.incits.org/tc\\_home/m1.htm](http://www.incits.org/tc_home/m1.htm)
- ISO/IEC JTC 1 SC 37 – Biometrics: <http://www.jtc1.org> (select SC 37)
- BioAPI Consortium: <http://www.bioapi.org>