BIAS

Biometric Identity Assurance Services

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• Biometric Identity Assurance Services
• Collaborative project of INCITS and OASIS
• Defines a framework for deploying and invoking biometrics-based identity assurance capabilities that can be readily accessed using services-based frameworks (e.g. web services).
  – To remotely invoke biometric operations across an SOA infrastructure.

http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=bias
In reviewing the current biometric-related standards portfolio and system oriented architecture (SOA) references, it became apparent that a gap existed in the availability of standards related to biometric services.
BIAS – Driving requirements

• Provide ability to remotely invoke biometric operations across an SOA infrastructure, decoupling the service from the interface (and requester) that calls it.

• Provide business level operations, without constraining the application/business logic that implements those operations.

• Provide basic capabilities that can be used to construct higher level, aggregate/composite operations.

• Be as generic as possible – technology, framework, and application domain independent.
INCITS & OASIS collaboration

- Development of the BIAS standard requires expertise in two distinct technology domains to ensure that the final specification provides the right structure, functionality, and technical details:
  - Biometrics, with standards leadership provided by INCITS M1
  - Service Architectures (initially focused on Web services), with standards leadership provided by OASIS

- Close collaboration between both standards organizations is required:

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<th>INCITS M1</th>
<th>OASIS</th>
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<td>Define “taxonomy”:</td>
<td>Define Web services bindings:</td>
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<td>– Identity Assurance operations</td>
<td>– Schema</td>
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<td>– Data Elements</td>
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- Existing standards are available in both domains and many of these standards will provide the foundation and underlying capabilities upon which the biometric services depend.
BIAS system context (INCITS)

• BIAS services are modular and independent operations which can be assembled in many different ways to support a variety of business processes.

• BIAS services may be implemented with differing technologies on multiple platforms.

• BIAS services can be publicly exposed directly and/or utilized indirectly in support of a service-provider’s own public services.
**BIAS system context (OASIS)**

- Defines a SOAP Profile to implement the “abstract” services specified in INCITS M1.

- Includes:
  - WSDL / XML schema
  - Data model / data dictionary
  - Message structure / rules
  - Error handling
  - Use cases & samples
Person-centric & Encounter-based systems

Person-Centric:
- One set of information for each subject
- New information updates and replaces any existing information

Identity Assurance Resource

Encounter-Centric:
- Encounters are grouped by the Subject ID
- All encounter information is preserved

Identity Assurance Resource
BIAS operations

- **Subject**
  - Create/delete subject
  - Add/remove subject from gallery

- **Biographics**
  - Set/list biographic data
  - Update/delete biographic data
  - Retrieve biographic data

- **Biometrics**
  - Set/list biometric data
  - Update/delete biometric data
  - Retrieve biometric data

- **Searching/processing**
  - Verify subject
  - Identify subject
  - Check quality
  - Classify biometric data
  - Perform fusion
  - Transform biometric data

- **Aggregate services**
  - Enroll
  - Identify
  - Verify
  - Retrieve information

- **Asynchronous results retrieval**

- **Query Capabilities**

W3C Workshop on SIV
Representing biometric data

- To meet BIAS goals, any type of biometric information needs to be able to be represented and used in the services.

- BIAS utilizes the existing CBEFF standard (ISO/IEC 19785-1:2006) to represent biometric data.
  - BIAS does not require any particular CBEFF patron format.
  - BIAS implementations may support one or multiple CBEFF patron formats.

- BIAS specification includes an XML representation of CBEFF header information.

- Today, BIRs are binary (embedded Base-64 or XOP).
  - Proposal to broaden to allow “pure” XML as well as BDBs only (using the XML CBEFF metadata as required) and URIs.
Representing biographic data

• BIAS provides flexibility for the amount and types of biographic data supported by implementing systems.

• BIAS provides two methods for representing biographic information:
  – A set of individual data items (name/type/value combinations)
  – An existing format, such as:
    • Electronic Fingerprint Transmission Specification (EFTS) [DOJ-CJIS]
    • National Information Exchange Model (NIEM) [DOJ/DHS]
    • xNAL: Name and Address Standard [OASIS Customer Information Quality TC]
    • HR-XML [HR-XML Consortium]
    • and others …

• Can include contextual & document information as well.
Example use case – online banking

• Scenario
  – An individual has a bank account at XYZ Bank. He would like to access his account information and perform transactions related to his account. The account holder uses his home PC with a biometric device (e.g., an iris camera) installed. In lieu of a password, the bank has configured their online banking web application to use biometric verification.

• Enrollment
  – The bank has issued the individual a one-time password to allow him to enroll his biometric into the system. The individual accesses the online banking site and selects ‘biometric enrollment’. He enters his account number and one-time password to access this function. Once verified, the enrollment application is initiated. The individual follows the steps to capture his biometric data and to perform a local 1:1 match against that data to ensure it will be “matchable”.
Example use case – online banking (cont’d)

– Once suitable data is acquired, it is submitted to the bank as an enrollment [Set Biometric Data]. At this point, the individual's biometric data has been associated with his identity (account).

– NOTE: Enrollment could also be performed in person at the bank, but a similar scenario would apply, less the one-time password.

• Account access

– Once an individual is biometrically enrolled, he would like to perform an online transaction. He accesses the online banking site and enters his account number. At this point, the individual is challenged to present his biometric (e.g., capture his iris). The individual interacts with the device to capture the biometric data. This data is then transmitted to the bank for verification [Verify Subject]. If the verification is successful, the bank will provide access to the transaction screens for the individual's account.
Example use case – lower level

Note that
1. CheckQuality, TransformBiometricData, VerifySubject can be exposed as interfaces of BIAS server agent.
Status

- INCITS 442 published May 2008
  - Revision just initiated to address items arising from OASIS project
- OASIS BIAS SOAP Profile draft in 45-day “informal public review” which ends 7 March
  - Goal is to publish before end of the year

- Next meetings:
  - INCITS M1.2: April 14-15
  - OASIS BIAS TC: 17 March

- Need: Reference/sample implementations!
Possible relationships

• Architectural relationship
  – Possible usage within a larger business/mission application in which biometrics is one subsystem and within which multiple modalities are present

![Diagram showing System/Application with BIAS, Other Subsystems, Biometric Subsystem, SIV, BIAS or BioAPI, Voice Components, and Other Modality Components]
Possible relationships (cont’d)

• Data relationship
  – Voice data produced within SIV may be further exchanged within a BIAS operation. For example, if via SIV a voice data capture were performed and if that data were needed for other purposed downstream or by another system, BIAS could be used as the mechanism for exchanging that data.

• Organizational relationship
  – It is possible that the two organizations may be able to assist one another by providing a review and comment function on each other’s work.
For your attention!

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