BioAPI Standards: Java Specification and Reference Implementation – Impact on API Adoption

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Agenda

- BioAPI Architecture
- BioAPI Java Specification & Reference Implementation
- Potential Impact of BioAPI Java
- Current Status & Future Work
The BioAPI Specification defines an open system standard application program interface (API) that allows applications to internetwork with biometric technologies irrespective of vendor and systems.

- Get equipment to talk to each other

**Evolution**

- HA-API
- BioAPI 1.0
- BioAPI 1.1
- ANSI INCITS 385
- ISO/IEC 19784-1
- BioAPI Java
Impact of BioAPI

- Rapid development of applications employing biometrics
- Standard modular access to biometric functions, algorithms, and devices
- Secured and robust biometric data management and storage
- Increased adoption of standard data interchange structures
- US DoD BMO and GSA Smart Card Program requiring BioAPI compliance
Need for BioAPI Java

- Current BioAPI specification is in C
- New technologies have additional requirements
  - Service oriented architectures
  - Mobile devices
  - Web applications
- Current solutions
  - JNI Wrapper
  - C# wrapper
BioAPI Java

- Design an object oriented specification semantically similar to ISO/IEC 19784-1

- Follows the component model of ISO/IEC 19784-1
  - Application, BioAPI framework and BSP

- Specification is object oriented from ground up

- Interfaces expressed in Java instead of C
BioAPI Java Specification

- Work on the project started in 2006
- INCITS new work item in March 2007 – INCITS 1892-D
- Joint contribution by Purdue and OSS Nokalva

**Similarities**
- BSP management Functions
- Enroll
- Verify
- Identify
- Capture
- Process
- Create Template

**Dissimilarities**
- Object oriented
- Callbacks replaced with interfaces
BioAPI Java Reference Implementation

- Runtime software
- Middleware between BioAPI compliant applications and BioAPI compliant BSP’s

- Consists of 3 packages
  - org.bioapi
    - components responsible for attaching, managing, and processing units interacting with the BioAPI framework.
  - org.bioapi.data
    - the data-structures and models which describe interfaces from org.bioapi
  - org.bioapi.net
    - interfaces used in networking operations
BioAPI Java Package

org.bioapi
- Component Registry
- Session Handling
- BSP operations
- Match Processing

org.bioapi.data
- BIR data structure
- BFP Schema
- BSP Schema

org.bioapi.net
- International Resource Identifier
BioAPI Java Applications

- Increase portability of applications
- Create a market of Java components
  - Java-based application servers
  - Java applets
  - Small scale Java-based devices, Match-on-card systems
- Increase level of adoption by offering more choices
- Increase interoperability of large scale international systems
Current Status

- Reference Implementation released on SourceForge
  - [https://sourceforge.net/projects/bioapijava/](https://sourceforge.net/projects/bioapijava/)
  - Password BSP and application released with the code

Todo:
- Test with industry supplied BSP
- Generate a Conformance Test Suite
- Harmonize BioAPI Java with other subparts of ISO/IEC 19784-x
Future Work

- Need more experts to look at the specification and reference implementation

- Requesting assistance from stakeholders
  - BSP development
  - Application development
  - Testing framework code

- Express BioAPI Java in other object oriented languages
Thank You!
Questions...

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