CBEFF

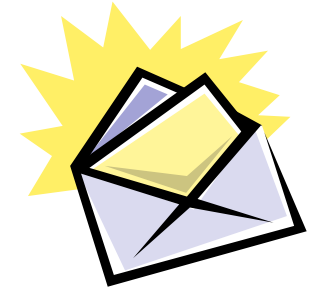## *Common Biometric Exchange Formats Framework*

6 March 2009

Catherine Tilton

What is a CBEFF?

- *CBEFF describes a structure and set of metadata elements necessary to support exchange of biometric information in a common way.*

- *Features*
  - Facilitates biometric data interchange between different systems or components
  - Promotes interoperability of biometric-based applications
  - Provides forward compatibility for technology improvements
  - Simplifies the software and hardware integration process

CBEFF history

Workshop – Feb 1999

Jan 2001

NISTIR 6529

Apr 2004

NISTIR 6529-A

Feb 2005   *Rev. 1, 2008*

ANSI INCITS 398-2005

May 2006

ISO/IEC 19785-1

Parts 2,3,4

Daon

CBEFF in a nutshell

| |
|---|
| Standard Biometric Header |
| |
| Security Block |

- Specifies a basic structure for exchanging biometric data
  - Metadata
  - Biometric data
  - Security information
- Defines abstract data elements used to describe the biometric data
- Doesn't constrain the encoding of data
- Registration of biometric data via IBIA
- Allows for new adaptations
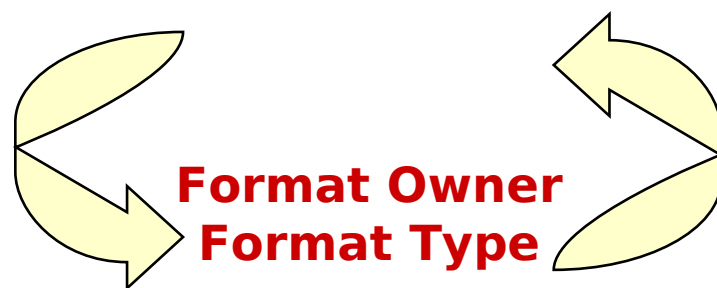- CBEFF compliance can be met by "Patrons and Clients" model

Daon

Common structure/elements

Biometric Information Record (BIR)

HEADER (SBH)	BIOMETRIC DATA BLOCK (BDB)	SECURITY BLK (SB)*
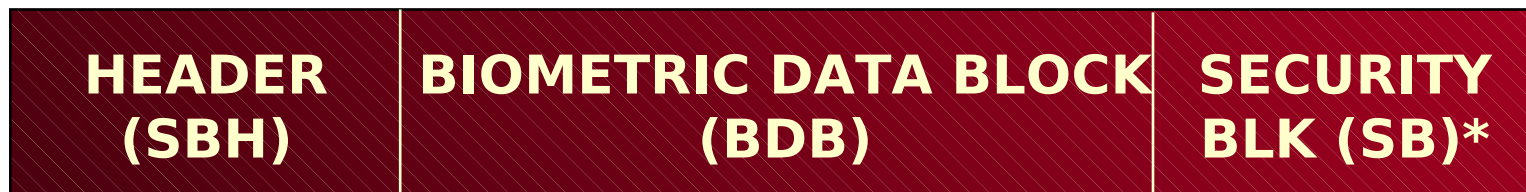
*Optional

Required Header field

Format Owner Format Type

iBIA
International Biometric Industry Association

Identifies the specific, detailed format of the succeeding biometric data (in BDB)

May be:
- standard or proprietary
- Published or unpublished
- Raw, intermediate, or processed
- For enrollment, verification, or identification
- One or more samples
- One or more biometric types
- Clear/encrypted, signed/unsigned

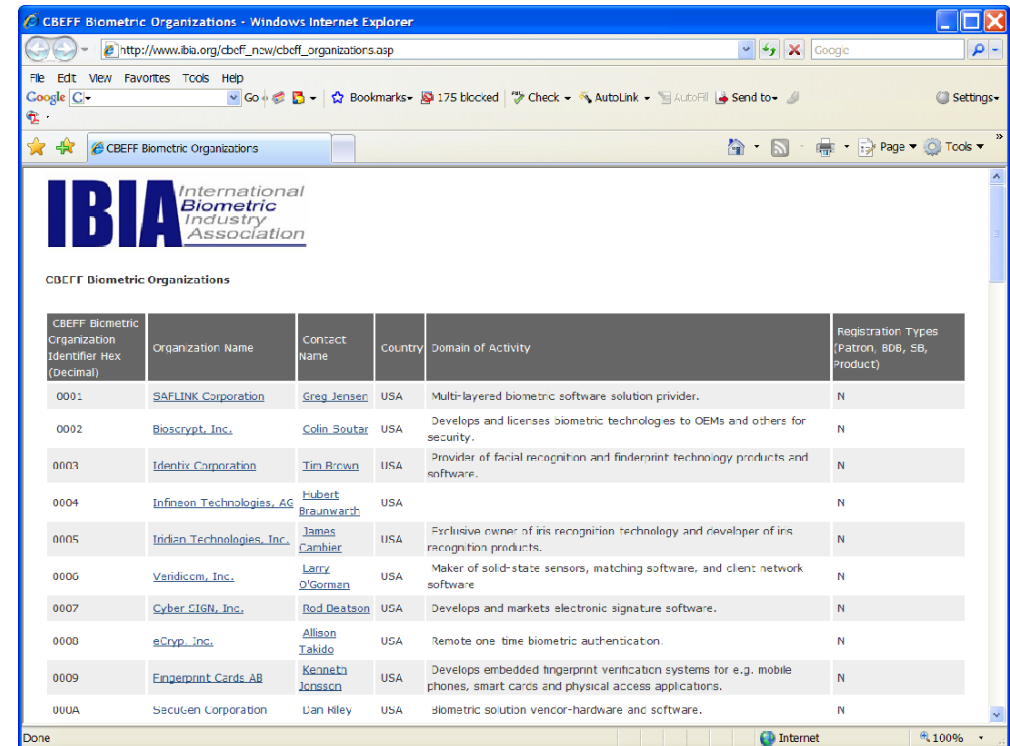Receiving component (application or technology)
reads Format ID and determines:

- Ability to interpret/process
- Decision as to where to route the data

Daon

Format Owners → 'Biometric Organizations'

- INCITS M1:   0x001B

- ISO/IEC SC37:   0x0101

- NIST: 0x000F

Also supports proprietary
(vendor) owners

M1 format types

Format Type	Format	Standard
0x0201	Minutiae (basic)	INCITS 378
0x0202	Minutiae (with extension)	INCITS 378
0x0301	Finger pattern (basic)	INCITS 377
0x0302	Finger pattern (extended)	INCITS 377
0x0401	Finger image	INCITS 381
0x0501	Face image	INCITS 385
0x0601	Iris (basic)	INCITS 379
0x0602	Iris (with extension)	INCITS 379
0x0701 - 6	Signature (various)	INCITS 395
0x0801 - 2	Hand Geometry (basic/ext)	INCITS 396

Daon

INCITS 456

HEADER (SBH)	BIOMETRIC DATA BLOCK (BDB)	SECURITY BLK (SB)*

GOES HERE

Daon

Example header elements

- **Mandatory**
    - BDB Format Owner
    - BDB Format Type
    - BDB Encryption Options
    - BIR Integrity Options

  Patrons can make optional elements mandatory.

- **Optional**
    - Biometric Type (modality)
    - Biometric Subtype (body part)
    - BDB/BIR Creation Date
    - BIR Creator
    - BDB Index
    - BDB Processed Level
    - BDB Product Owner/Type
    - BDB Purpose
    - BDB Quality
    - BDB/BIR Validity Period
    - BDB/BIR Index
    - BIR Patron Format Owner/Type
    - Patron Header Version
    - SB Format Owner/Type

Daon

ISO 19785 parts

- 19785-1: Elements
- 19785-2: Registration Authority Procedures
- 19785-3: Patron Formats
- 19785-4: Security Block Formats

- Part 3 Patron Formats:
  - Minimum simple bit-oriented
  - Min. simple byte-oriented
  - Fixed field byte-oriented
  - Fixed field bit-oriented
  - TLV
  - Complex
  - XML

- Note: BioAPI patron format specified in 19784-1.

Daon

OASIS XCBF

- **Organization for the Advancement of Structured Information Standards (OASIS)**
  - eXtensible Markup Language (XML)
  - XML Common Biometric Format Technical Committee (XCBF) WG
- **What is XCBF?**
  - A Security Standard that defines a common XML markup for two US binary biometrics standards - X9.84:2002 & BioAPI 1.1
  - Instantiation of CBEFF
  - Simple Signature, MAC, HMAC & Encryption for XML markup relies on the same proven, efficient processing used for binary formats in *IETF SMIME, RSA PKCS #7, SET, X9.73 CMS, ...*
- **What does XCBF look like?**
  - An ASN.1 Schema for XML – markup is encoded in a canonical variant of the ASN.1 XML Encoding Rules (cXER)
  - Common Cryptographic Processing for binary & XML markup
- **What is the current status?**
  - Version 1.1 published Aug 2003
  - Used within X9.84-2003
- **For more information:**

  http://www.oasis-open.org/committees/xcbf
  http://www.oasis-open.org/specs/index.php#xcbfv1.1

Not aligned with latest CBEFF

Daon

Where is CBEFF being used?

- ICAO – E-Passports (Logical Data Structure, LDS)
- PIV (FIPS-201) Federal employee credentials
- Transportation Worker Identification Credential (TWIC)
- Registered Traveler (RT) cards
- Other standards:
  - ANSI/NIST-ITL 1-2007 (Type-99 records)
  - BioAPI (ANSI INCITS 358, ISO/IEC 19794-1)
  - ANSI X9.84
  - ISO/IEC 7816-11

Daon

Thanks!

For your attention!

Catherine Tilton
VP, Standards & Technology, Daon
11955 Freedom Drive, Suite 16000
Reston, VA 20190
703-984-4080
cathy.tilton@daon.com

Daon