Aware Biometrics Software

a complete set of development tools *for* standard-compliant, interoperable biometrics systems

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Commercial Experience Converting between ANSI/NIST-ITL 1-2000 and XML

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Provide Standardized Method for Supporting XML Conversions

- Background:
  - Our customers sometimes wish to convert ANSI/NIST formatted data to an XML format- “NIST to XML”
  - We have supported this conversion in our software tools for several years now
  - Less frequently we are asked to support “XML to NIST”
  - This is more complicated because each Domain defines its own record and field requirements
  - Also, we have always provided the ability to read/write ANSI/NIST formatted data
    - “Use your preferred XML parser and write ANSI/NIST with our software” is what we suggested

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XML and ANSI/NIST-ITL 1-2000

- Most recently we have added XML to ANSI/NIST conversion support to our software tools

- Recommendation:
  - ANSI/NIST-ITL 1-2000 should not be converted to a pure XML format
  - The standard is very widely used and it very efficiently solves the problem it was designed to solve
    - Parsable, fully interchangeable, compact file that holds fingerprint images, facial images and biographic data
  - Guidelines or templates for converting between the standard and an XML schema could be provided in the new revision

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Domain Independent Schema

- Option
  - Provide a bridge to the XML world through a minimalist XML schema that mimics the structure of ANSI/NIST-ITL 1-2000
  - This schema elements have the format…
    - Transaction
    - Record
    - Field
    - Subfield
    - Item
  - Images can be exported as separate objects or base-64 encoded and embedded into the XML

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Domain Independent Schema

- Advantages:
  - A single schema that can be used for any ANSI/NIST file
  - Mirrors the structure of the ANSI/NIST file
  - Users can take this “bridge schema” and use any number of available tools to parse or convert to another XML schema

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Example

```
<record type="2">
   <field number="2" name="T2_IDC">
     <subfield>
       <item>00</item>
     </subfield>
   </field>
   <field number="5" name="T2_RET">
     <subfield>
       <item>Y</item>
     </subfield>
   </field>
   <field number="6" name="T2_ATN">
    <subfield>
       <item>SA J Q SMITH, RM 4569</item>
     </subfield>
   </field>
   .
 </record>
```

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Domain Specific Schema

- Option
  - Reflect domain specific requirements for TOTs, record types, and all type 2 record requirements in the element tags
  - Our solution:
    - Use an Aware devised schema that can support any ANSI/NIST domain
    - Use one of numerous conversion tools to convert between original schema and Aware domain specific schema
    - Our tools can read and convert to/from ANSI/NIST

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Domain Specific Schema

- Advantages
  - Element tag names identify field content making XML files more readable.

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Example

```
<Type2>
 <T2_IDC>
  <subfield>
   <item>00</item>
  </subfield>
 </T2_IDC>
 <T2_RET>
  <subfield>
   <item>Y</item>
  </subfield>
 </T2_RET>
 <T2_ATN>
  <subfield>
   <item>SA J Q SMITH, RM 4569</item>
  </subfield>
 .
 .
</Type2>
```

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Thank-you!

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