



**2007 Annual Report on the State of Biometric
Standards**

Effective April, 2007

Progress in Standards Development

In August, 2006 the NBSP standards summary spreadsheet listed 14 US biometric standards that had been published by the US INCITS M1 committee and an additional 5 standards that were nearing publication. Of those 5 standards, three have been published, one underwent further changes and is expected to be published shortly, and one was overtaken by changes to other standards and required a major rewrite.

Several additional standards have also completed their development cycle and have transitioned into the "nearing publication" phase, leaving the INCITS M1 committee with 17 published standards and 4 more that are anticipated to be published soon.¹

Four of these 17 standards relate to the interfaces between biometric systems and other systems (i.e. BioAPI and CBEFF), including a conformance testing standard for BioAPI. Nine of them relate to data interchange formats, including the first part of a multi-part conformance testing methodology standard for data interchange formats. Subsequent parts that define conformance testing for the finger minutiae and finger image standards are very close to publication, but may require one more round of public review, pending a decision from ANSI, so they have not been included in these totals. There are also four standards that profile other standards in order to explain how to use biometrics for a particular application and finally four standards that explain how to perform biometric testing and reporting.

Overall, this shows that the standardization process has reached a reasonable level of maturity in the US, with numerous standards in all the major subject areas and with the conformance testing standards that have been a major gap finally starting to become available. The small increase in the number of published standards, however, is symptomatic of the work overload and participation problem faced by the M1 committee discussed in the next section.

The ISO/IEC JTC-1 SC 37 committee is the group responsible for the international standardization of biometrics. The committee's work has also begun to reach a reasonable level of maturity. The number of published ISO biometrics standards went from 10 to 16 in the short timeframe of

¹ Note that this considers amendments as separate standards, since they result in separate documents that are published and sold by the standards development bodies. Revisions, on the other hand, result in a wholesale replacement of a previous standard.

August, 2006 to April, 2007. There are several additional SC 37 standards that are in an advanced state of development. This represents a very high degree of productivity for an ISO committee. Of these sixteen published standards, six are related to the interface between biometric systems and other systems (including two BioAPI conformance testing standards), eight define different biometric data interchange formats, and two explain how to perform biometric testing and reporting. Progress in the area of biometric profiles has been slower at SC 37, principally because there is little agreement on exactly what material a biometric profile should contain. Likewise development of conformance testing standards for data interchange formats began recently, although progress has been slower than in M1.

Overall, much progress has been made on biometric standards both nationally and internationally. The focus should now shift to finishing the work currently underway as well as fine tuning the existing standards and providing supplementary documents to encourage their adoption and use.

Gaps in Standards Development

There are either published or emerging biometric standards that address almost every major fundamental aspect of biometrics. Over time, more technologies are being addressed, with new data formats currently under development on speaker recognition in M1 and on DNA in SC 37. While conformance testing standards have made substantial progress since the last report delivered in August, 2006, a continued focus on conformance testing for data interchange formats in SC 37 should remain a high priority. Conformance testing will be critical for the many large scale international deployments of biometrics where the data created in one country must be conformant to the SC 37 standards to enable the data to be read and used by another country.

There are still some gaps in standards development, however, which need to be addressed. These include the following:

- Biometric data quality standards have been discussed for several years, but remain hampered by a lack of agreement on the different methods for defining quality. In SC 37, the two quality standards that were intended to have normative content have been redefined to be technical reports and in M1, a quality standard that has been under development since 2003 has still not reached public review. This area needs more emphasis and attention.
- The conformance testing standard for CBEFF has yet to be completed. This effort should be a priority, considering the wide variety of different patron formats and the difficulty for developers who are familiar with their own biometric technology but not so with CBEFF.

- SC 37 needs to make a decision to either cease developing biometric profiles, or accept that there will never be perfect agreement on the content of a profile and to make some compromises to produce progress in this area...
- There are several large families of related standards which are either multi-part standards or closely related standards (e.g. the various M1 data interchange formats). In almost every case, there are inconsistencies between the related standards, both in style and in content. In order to remedy this situation the related family of standards should be harmonized in time for the natural revision cycle of these standards.
- Since many of the M1 and SC 37 standards were completed in an unusually rapid development cycle, it is becoming apparent that there are contradictions or confusing language in different places. Some of these issues are being addressed through defect reports, but a slow and considered revision process that pays attention to these details is necessary. Confusing standards can be worse than no standards, so it is vital this is handled properly. Currently there are revision and amendment projects underway for several of the M1 and SC 37 standards but there is the potential that these will also follow a rapid development cycle and that the same problem will recur.

Beyond these remaining gaps in the standards process, there is a significant issue impacting both national and international standards development. The multitude of biometric standards being developed, including amendments, corrigenda and revisions has become too great a workload for the standards development committees to manage. There is evidence that this overload trend continues to move in the wrong direction when one notes that the number of published and nearly published standards has increased by 18% while the number of emerging standards has increased by 25% to a total of 80. This overload is particularly acute in SC 37 WG 3, which handles data interchange formats (many with several amendments, corrigenda or revisions currently open) as well as quality standards and conformance testing for data interchange formats. Excluding corrigenda, this means that WG 3 is currently developing 29 separate documents, which is more than a single working group can reasonably be expected to manage. SC 37 WG 2 is also very busy and several of the key experts are shared among WG 2 and WG 3, further compounding the problem.

M1 has a similar issue of workload, because of the parallel tracks of development for both US standards and for US contributions to international standards. The committee also appears to be suffering from a certain amount of fatigue on the part of biometric technology vendors. One of the

reasons for vendor participation in the standards development process is an expectation of a substantial increase in the size of the biometric marketplace. Such expectations (realistic or not), may not have materialized to the extent anticipated and vendors are thus less interested in providing the technical effort to support the initially developed standards. Whatever the root cause(s), the tangible evidence is the decreasing pace of standards development within M1, an increase of only two in the published or almost published category over the last eight months which is not consistent with M1's historically prolific output.

A reduced attendance at meetings by biometric technology providers was also noted. For example, the April 2006 meeting of M1.3 had 23 members present, of which 17 were biometric technology companies (74%). By comparison, the recent March, 2007 meeting of M1.3 had 18 members present, of which 9 were biometric technology companies (50%). This was reflected in M1 plenary meetings as well, where vendor attendance dropped 33.3% between the April 2006 and the March 2007 meetings. As a percentage of all attendees, vendors comprised 54% of total attendees in 2006, and only 43% in 2007. While it's too early to declare this either a crisis, or a continuing trend, there has certainly been a recent decline in participation in U.S. standards development by the vendor sector of the biometrics industry.

A consolidation and prioritization of the work load, coupled with an effort to locate additional technical experts across the biometric community would be useful steps for M1 to take in order to continue to provide the same laudable level of benefit that it has in the past. An initial consolidation may be to simply eliminate US standards efforts, (where appropriate and adequate international standards exist), and to gradually retire M1 standards in favor of their SC 37 equivalents.