Minutiae Record
Fields 9.003 through 9.012

Fields 9.004 – 9.012

At the July 2010 Workshop

- Field 9.004   FMT=U   User-defined format (To be used)

    FMT=S   Standard format (deprecated)

- Deprecated: Fields 9.004 - 9.012 to describe

    "standard minutiae – 1993"

- But there are legacy records that use these fields!!

- Legacy records may still be transmitted in a transaction conformant to the this version

- Transmitted for legacy data records only – See 2007/2008

- Field 9.003 shall contain "S" for these records

- No new records to be created using these fields

Stitching 4 finger slap from individual images

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- **Study issues associated with the stitching of live-scan images (from multiple sensors) to form a composite slap-4 image**
- **Main issue: Consider whether such a composite image should be prohibited by the standard**
  - 4 or 5 finger simultaneous capture
  - Multiple 1 or 2 finger sequential captures
- **Some of the contributors:**

– Scott Swann	Tom Hopper	Mike Garris
– Fred Jaco	Joe Jones	John Lenox
– Behnam Bavarian	Adam Rosefsky	Brad Wing
– Margaret Lepley	Mike Chaudoin	John Mayer-Splain
– John Libert	Shahram Orandi	

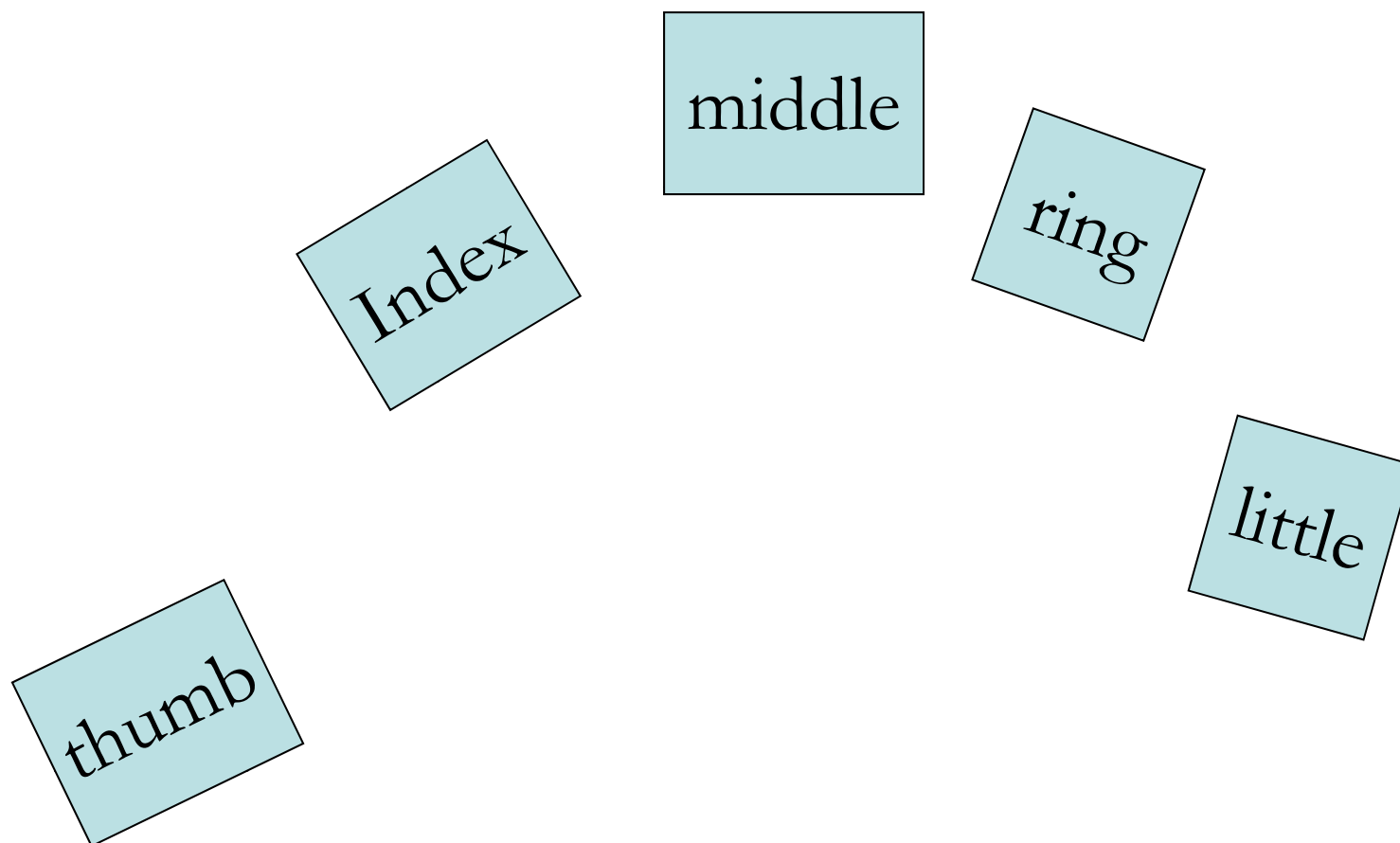# SLAP IMAGE   (Familiar Single platen capture)

- **Characteristics:**
  - Four finger capture
  - Simultaneous capture
    Finger adjacency
  - Preserves finger sequence
  - Every pixel in image is live
  - Pass Appendix F IQS requirements

- **Value:**
  - Sequence checking
  - ID flat processing

New Live Scan Capture Devices

middle

ring

Index

little

thumb

Allowable Slap Image?

Question

- Can the four finger images be placed in a composite slap image? (Change to ANSI/NIST)

OR

- Must the four images be transmitted as four separate fingers (Change to API)

Pros & Cons

- **PROS:**
  - Can be used for ID flat applications requiring a single image of four fingers (not separate images)
  - Four finger simultaneous capture

- **CONS:**
  - All pixels are <u>not</u> live
  - Fingers are <u>non</u>-adjacent
  - Preserves finger sequence ???
  - Segmentation errors could occur

Option 1 – Composite NOT ALLOWED

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- Must be treated as 4 separate images
- Need to preserve fact that images taken simultaneously
- Field 14.026 – Simultaneous capture/SCF
- Index to be included with all images captured simultaneously, for example:
  - Each of the 4 right hand images would set Field 14.026 = 1
  - Each of the 4 left hand images would set Field 14.026 = 2

Option 2 – Composite ALLOWED

- Allow the 4 simultaneously captured images to be combined into a composite slap
- Need to know that the slap image was _not_ a conventional single platen image capture
- Provides algorithm with a trigger to potentially alter normal processing (or at least realize multiple platens used)
- Field 14.026 describes stitching and provides information on segmentation
  - Subfield for each finger
  - Seven information items per finger

Field 14.026 Description

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- Number of finger images simultaneously captured and placed in composite image
- Finger number {2-5} {7-10}
- X-coordinate of upper left corner of finger
- Y-coordinate of upper left corner of finger
- X-coordinate of lower right corner of finger
- Y-coordinate of lower right corner of finger
- Orientation of stitched finger image boc in relation to the composite image.

Mobile ID Devices

MOBILE ID Devices & BPR

- **Devices developed for law enforcement purposes**
- **Viewed as a portable station to capture a subject's biometrics**
  - DoD for verification, access control, checkpoint operations
  - DHS for US VISIT, TWIC, & PIV
- **Allows capture and matching of biometrics in near real time with no transportation of subject and zero transit time**
- **Functions for enrolment, identification, & verification**
- **BPR addresses fingerprint face and iris modalities**
- **SAP level identifies progressively more stringent sets of requirements relevant to the device and modality**
- **Specific SAP levels linked to function, risk level, and modality**

Capture	5	10	20	30	40	45	50	60
Acquire flat images	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acquire rolled images	No	No	No	No	Optional	Optional	Optional	Optional
Minimum resolution	500 ppi ± 10 ppi	500 ppi ± 10 ppi	500 ppi ± 10 ppi	500 ppi ± 10 ppi	500 ppi ±10 ppi	500 ppi ± 5 ppi	500 ppi ± 5 ppi	500 ppi ± 5 ppi
Minimum Gray levels	256	256	256	256	256	256	256	256
Minimum Image Dimensions (wxh)	.5" x .65"	.5" x .65"	.6" x .8"	.8" x 1.0"	1.6" x 1.5"	1.6" x 1.5"	2.5" x 1.5"	3.2" x 3"
Minimum image area	.325 sq in	.325 sq in	.48 sq in	.8 sq in	2.4 sq in	2.4 sq in	3.75 sq in	9.6 sq in
Compression algorithm	N/A	WSQ	WSQ	WSQ	WSQ	WSQ	WSQ	WSQ
Maximum compression ratio	N/A	10:1	10:1	10:1	15:1	15:1	15:1	15:1
Simultaneous number of fingers	1	1	1	1	1 to 2	1 to 2	1 to 3	1 to 4
Sensor certification	PIV	PIV	PIV	PIV	PIV	Appendix F	Appendix F	Appendix F
Minutiae extractor certification	PIV	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Interchange								
Image / template	Minutiae	Image	Image	Image	Image	Image	Image	Image
Standard used	INCITS 378-2004	ANSI/ NIST Type-4 or Type-14	ANSI/ NIST Type-4 or Type-14	ANSI/ NIST Type-4 or Type-14	ANSI/ NIST Type-4 or Type-14	ANSI/ NIST Type-4 or Type-14	ANSI/ NIST Type-4 or Type-14	ANSI/ NIST Type-4 or Type-14