Overview of the ISO/IEC 30107 Project

Anti-Spoofing and Liveness Detection Techniques

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Authentication Use Case Comparison

For law enforcement, immigration, etc.

- Enrollment and subsequent recognition attempts
  - highly controlled
  - Supervised / Attended
- Successful recognition
  - Answers the question, “Has this person been previously encountered?”
  - Is a unique pattern

For online transactions, e.g. banking, health, etc.

- Enrollment
  - Less controlled
  - Probably not in person
- Subsequent recognition attempts
  - Unattended
- Successful recognition
  - Answers the question, “How confident am I that this is the actual claimant?”
  - Is a tamper-proof rendering of a distinctive pattern

Biometric Security Issues

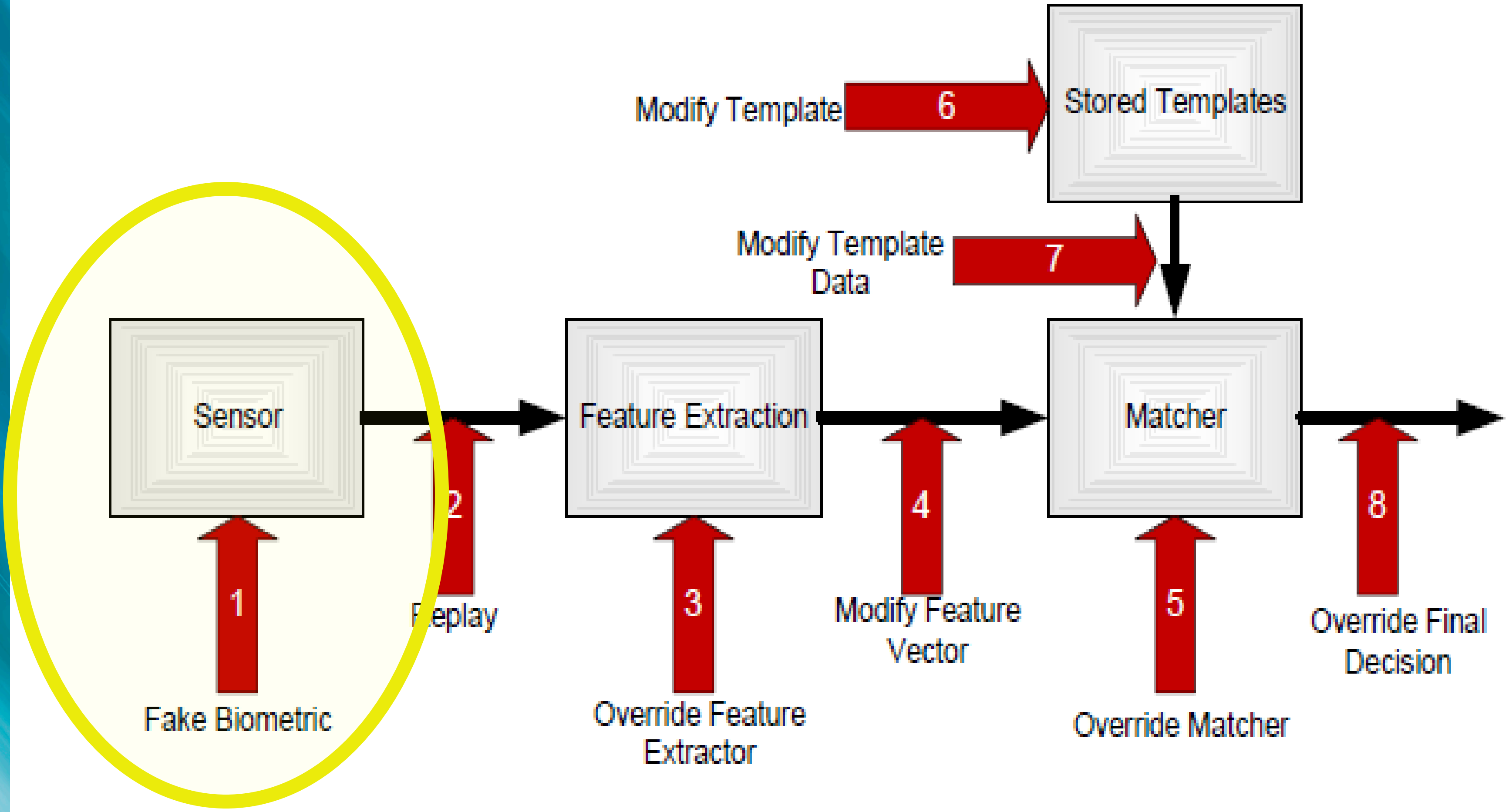


Figure by Nalini Ratha, IBM, 2001

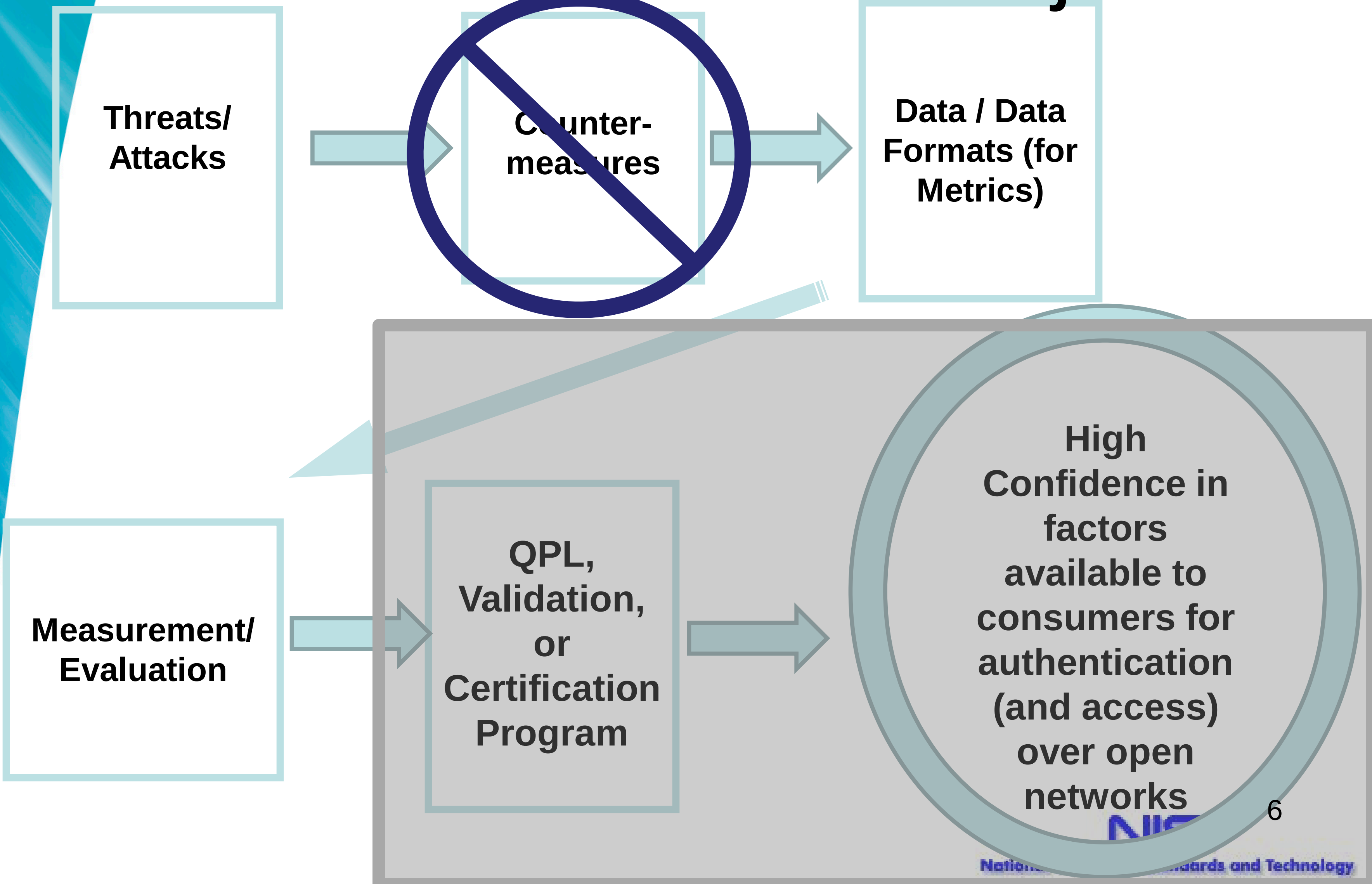
We're not in Kansas anymore…

- Increasing use of online and mobile apps and need for more complex & secure ID management
  - Exemplified by the National Strategy for Trusted Identities in cyberspace, released April 2011
- Recognized need by groups of potential users:
  - Financial Services Technology Consortium
  - The Drug Enforcement Administration (DEA)
  - The US National Science and Technology Council report on the "The National Biometrics Challenge."

Remote Authentication in the US Federal Government

- NIST Special Pub 800-63-1 provides technical requirements for remote authentication over an open network
- Four Assurance Levels, ranging from low or no confidence (1) to very high confidence (4) in the claimant’s identity
- Framework is based on secrets; Biometrics are not included in authentication protocols in this guidance.
- Adopted outside of the USG and in the final stages of being standardized in ISO/IEC JTC 1 SC 27 and ITU-T SG17 (jointly)

Anti-Spoofing/Liveness Detection Standards Project



Threats/ Attacks

Counter-measures

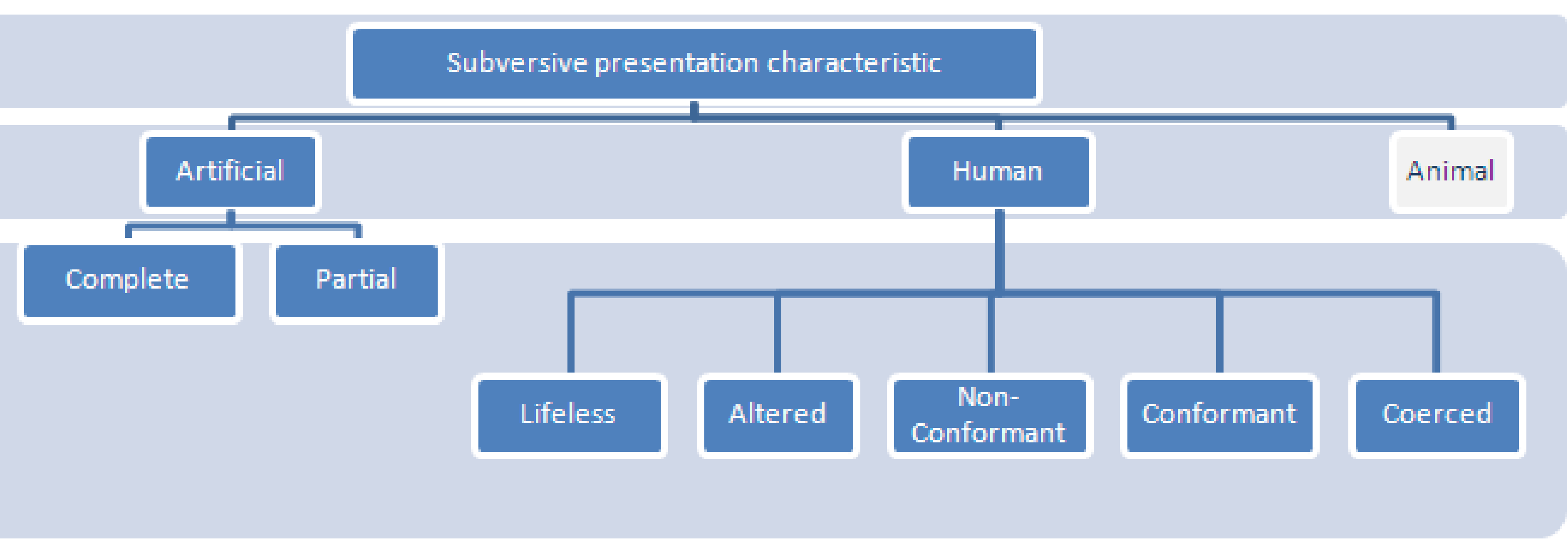
Data / Data Formats (for Metrics)

Measurement/ Evaluation

QPL, Validation, or Certification Program

High Confidence in factors available to consumers for authentication (and access) over open networks

Types of Biometric “Spoofing”*



From the 3rd Working Draft of IS Project 30107

Types of Detection

Through a biometric system	Artefact Detection
	Liveness Detection
	Challenge-Response
	Alteration Detection
	Non-conformance Detection
	Coercion Detection
	Obscuration Detection
Through system security policies	Failed attempt detection
	Geographic
	Temporal

From the 3rd Working Draft of IS Project 30107

Examples of Data Fields for Detecting Suspicious Presentations*

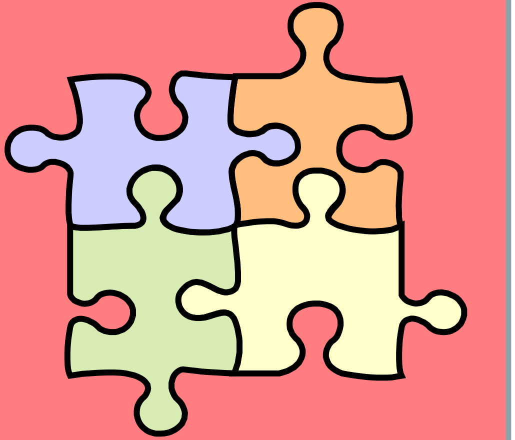
- Is there a local check for SPD (yes/no)?
- The local SPD decision (pass/fail)
- A score between 0 and 100 provided by the spoof detection mechanism, with lower scores being indicative of spoofed samples
- technique specific data and their units;
- level of supervision / surveillance during capture (qualitative categories)

(In addition to: vendor ID, algorithm ID, and sensor ID.)

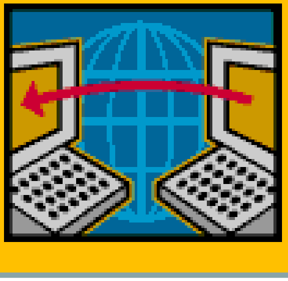
**From the 3rd Working Draft of IS Project 30107*

Topics for Discussion

Terms & Concepts

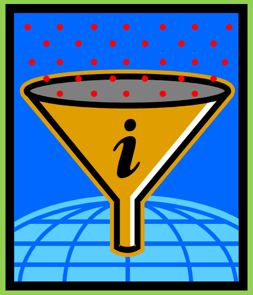


Metrics for Recognition Decisions



Testing Principles

Evaluation Metrics



Up Next…

- Rick Lazarick, CSC, Co-editor of ISO/IEC 30107
  - Spoofs, Subversion & Suspicion: Terms and Concepts
- Stephanie Schuckers, Clarkson University, and Arun Ross, West Virginia University
  - Error rate metrics proposed for detection of suspicious presentations to biometric authentication systems.
- Ralph Breithaupt, BSI
  - Need and perspectives to realize liveness detection
- Axel Munde, BSI
  - How can artifact detection complement common criteria and other security assessments of authentication systems

How to Participate in the Development of 30107

- In the US, interested parties participate through INCITS M1
  - http://standards.incits.org/a/public/group/m1
- In other countries, interested parties participate in their country's Technical Advisory Group (TAG) to ISO/IEC JTC1 SC37

Thank you
&
Safe Travels

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