



# Overview of the ISO/IEC 30107 Project

Anti-Spoofing and  
Liveness Detection Techniques

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# Remote Authentication in the US Federal Government

- OMB Memo 04-04
  - Describes 4 assurance levels, with qualitative degrees of confidence in the asserted identity's validity:
    - Level 1: Little or no confidence    Level 2: Some confidence
    - Level 3: High confidence            Level 4: Very high confidence
- NIST Special Publication 800-63-1
  - Technical requirements for remote authentication over an open network in response to OMB 04-04
- Biometrics not included in authentication protocols in this guidance
- Adopted by other countries and standards orgs.

# Biometric Security Issues

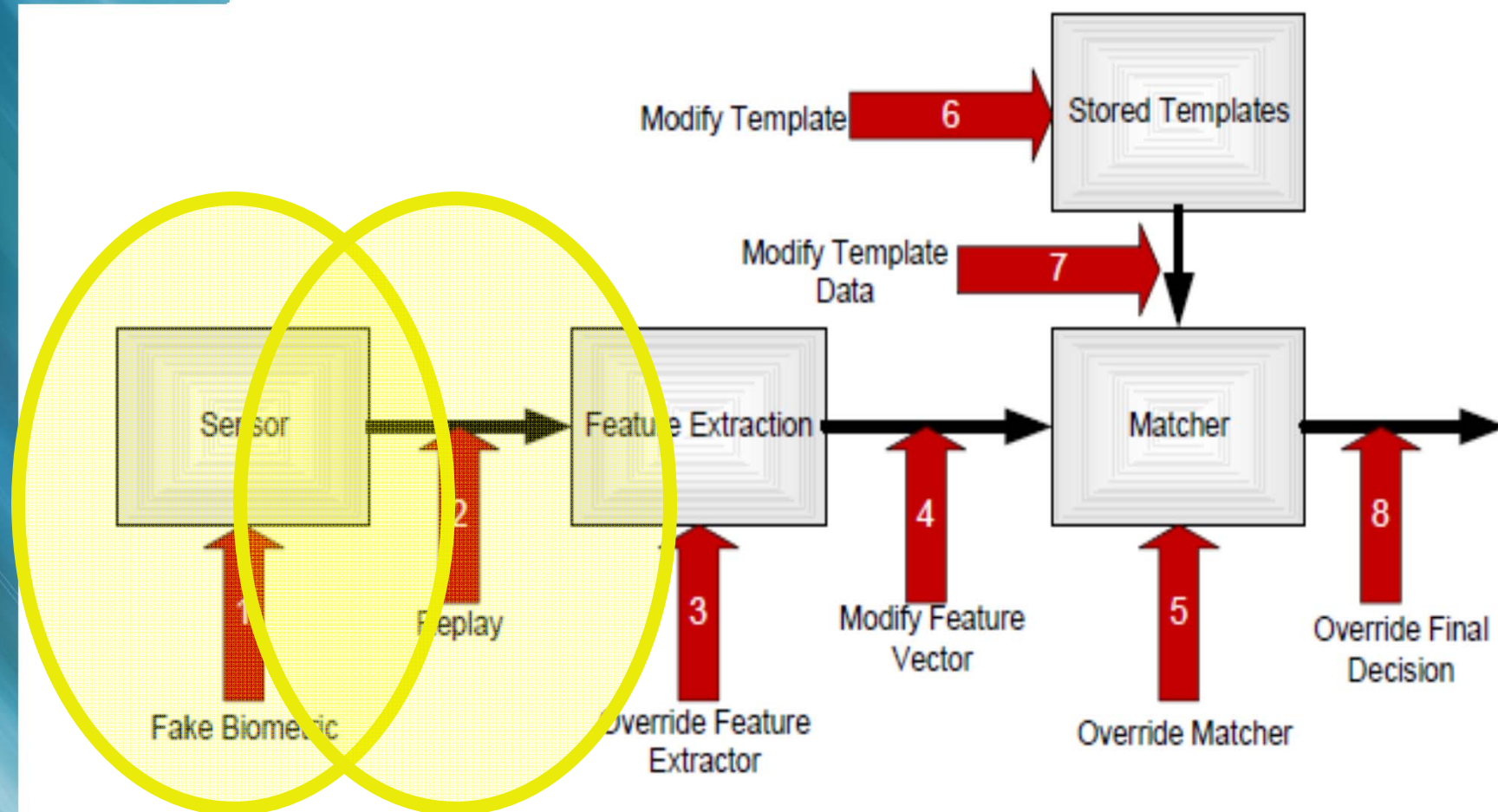


Figure by Nalini Ratha, IBM

# Authentication Use Case Comparison

**For law enforcement, immigration, etc.**

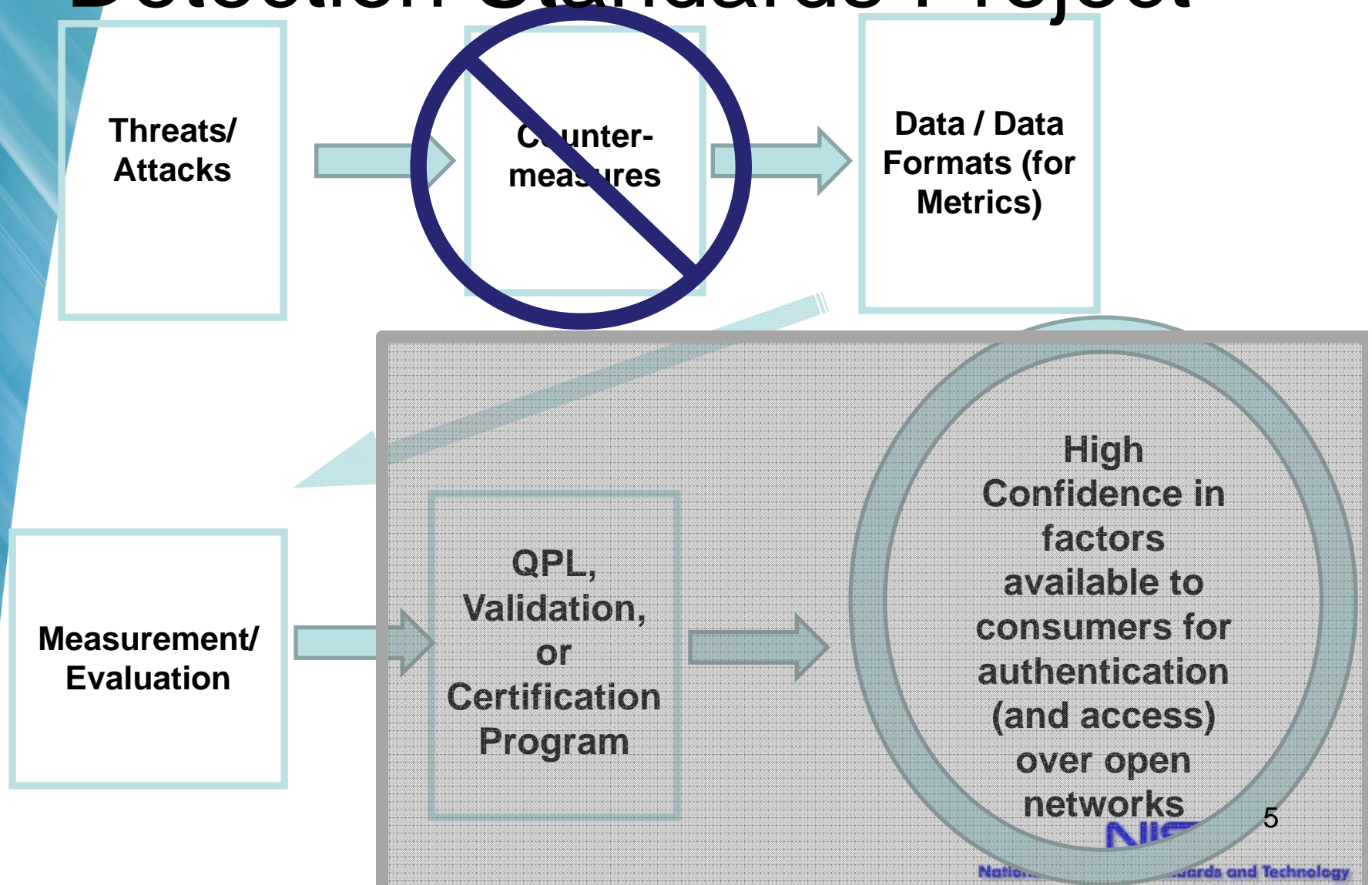
- Enrollment and subsequent recognition attempts
  - highly controlled
  - Supervised / Attended
- Successful recognition
  - Answers the question, “Has this person been previously encountered?”
  - Is a unique pattern

**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

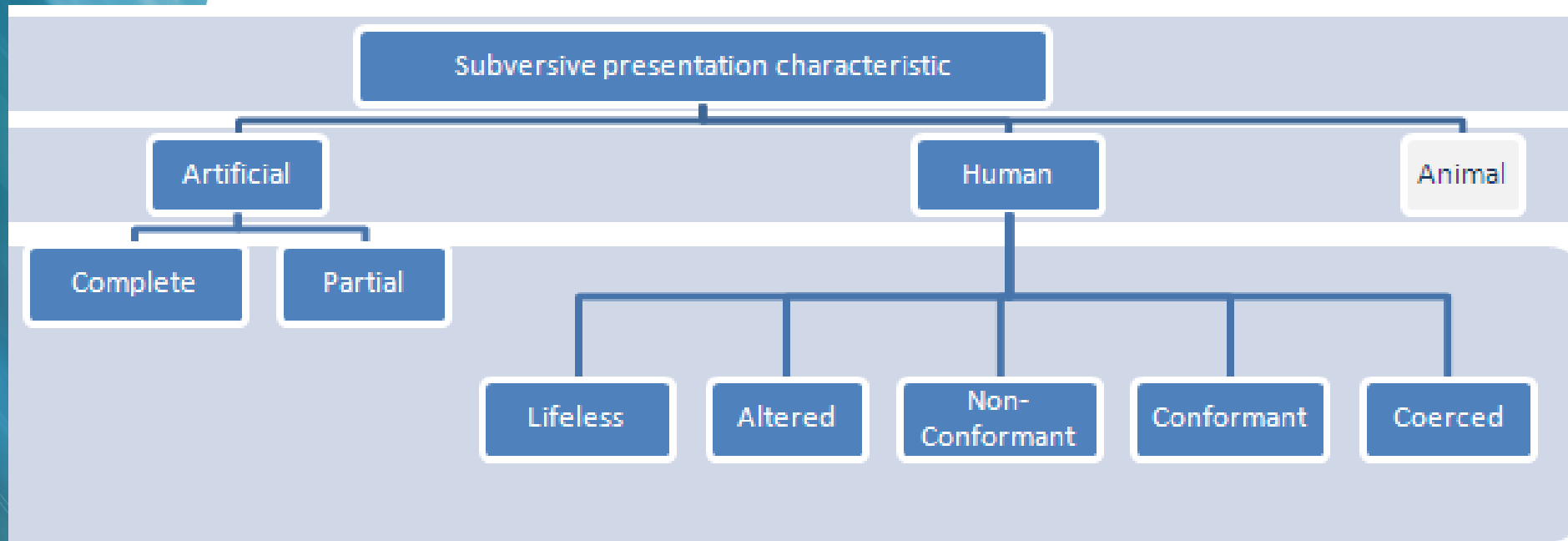


# Anti-Spoofing/Liveness Detection Standards Project





# Types of Biometric “Spoofing”\*



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



# Types of Detection

<b><i>Through a biometric system</i></b>	Artefact Detection
	Liveness Detection
	Challenge-Response
	Alteration Detection
	Non-conformance Detection
	Coercion Detection
	Obscuration Detection
<b><i>Through system security policies</i></b>	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*



# 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



# If you liked this...

*Join us Friday for Satellite Workshop II:  
Artefact, Liveness, & Suspicious  
Presentation Detection*

*Where we will discuss testing, error  
rates, and terms and concepts.*

- ***Location: Portrait Room, NIST***
- ***Time: 09:00 - 12:00, Friday March 9, 2012***



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# Thank you

# Questions?

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# Examples of Artificial and Human Subversive Presentation Characteristic Types

Artificial	Complete	gummy finger, latex finger, photo of face, photo of iris, recording of voice, video of face, artificial hand, custom contact lens, artificial/patterned contact lens, facial mask (ski, theatrical, Halloween), opaque or theatrical contact lenses
	Partial	glue on finger, false facial hair, cosmetics, removable implants, sunglasses
Human	Lifeless	cadaver part, severed finger/hand
	Altered	nose job, face lift, amputation, mutilation, surgical switching of fingerprints between hands and/or toes
	Non-Conformant	voice mimicry, hand shape control, forged signature, facial expression/extreme, tip or side of finger, falsetto voice
	Conformant	zero effort imposter attempt
	Coerced	unconscious, under duress, drugged