# *Information Security and Privacy Board*

*Background and current status*

- *Use of Hashing Algorithms in the U.S. Federal Personal Identity Verification Program*
- *Biometrics Storage Format Selection for the U.S. Federal Personal Identity Verification Program*

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# Topics

- General Status of U.S. Federal Personal Identity Verification Program
- Use of Hashing Algorithms in the U.S. Federal Personal Identity Verification Program
    - Processing Concept
    - Programmed Changes in Key/Hash Size Requirements
    - Other Uses of Hashes
- Biometrics Decision for Special Publication 800-76
    - Minutiae-based vs Image-based Storage
    - SP 800-76 Biometrics Storage Formats
    - Conformance Determination

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FIPS 201 REQUIREMENTS

# Phased-Implementation
## In Two Parts

- ❑ Part 1 – Common Identification and Security Requirements
  - ❑ HSPD 12 Control Objectives
  - ❑ Identity Proofing, Registration and Issuance Requirements
  - ❑ Effective October 2005
- ❑ Part 2 - Common Interoperability Requirements
  - ❑ Detailed Technical Specifications
  - ❑ Office of Management and Budget made Effective October 2006 (OMB M-05-24)
- ❑ Migration Timeframe (i.e., Phase I to II)
  - ❑ Agency implementation plans have been provided to OMB
  - ❑ OMB has issued schedule for full implementation in 2009

FIPS 201

# Implementation Status and Current Actions

- ❑ Revision to FIPS 201 (FIPS 201-1)
  - Interim Issuance Based on National Criminal History Check
  - Electronic Indication of Interim Status
- ❑ Conformance Testing of Cards Built to FIPS 201/SP 800-73 Currently Underway
  - Card Interfaces
  - Card Storage Formats
  - Middleware Interfaces
- ❑ Formal NVLAP Accreditation of NPIVP Laboratories Underway

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Special Publication 800-78

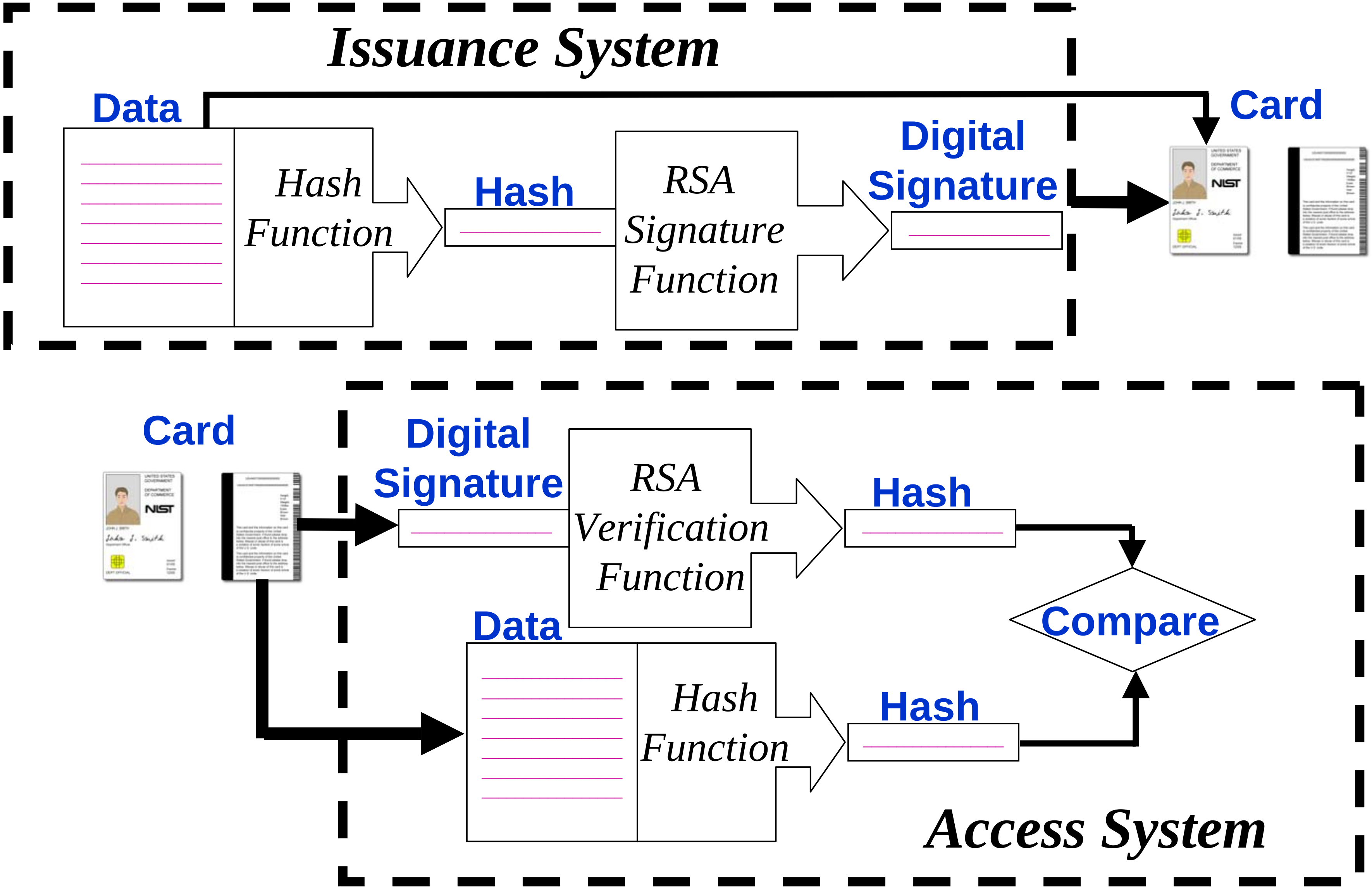
# Cryptographic Algorithms and Key Sizes for Personal Identity Verification

## SP 800-78 specifies:

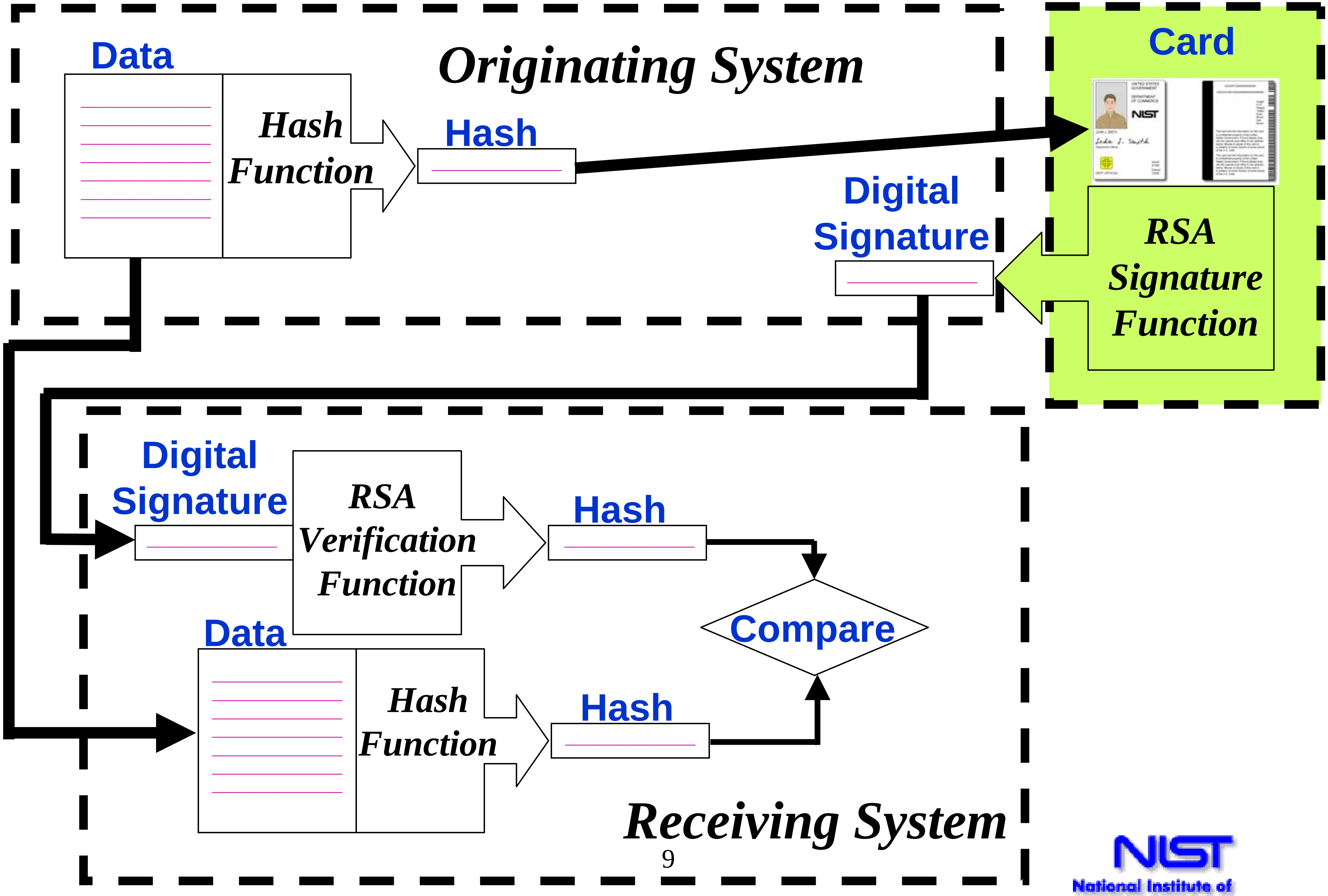
- Mandatory PIV Authentication Data (asymmetric key pair and corresponding PKI certificate)
- Optional Keys
    - Asymmetric key pair and corresponding certificate for digital signatures
    - Asymmetric key pair and corresponding certificate for key management
    - Asymmetric or symmetric card authentication keys for supporting additional physical access applications
- Cryptographic Algorithms and Key Sizes
- Authentication Information Stored on the PIV Card

National Institute of Standards and Technology

# Hashing Concept (Data Stored on Card)



# Hashing Concept (Card Signs Data)



National Institute of Standards and Technology

## SP 800-78 specifies:

- ❑ Digital Signatures for Card Holder-Unique ID, Stored Biometric Information, X.509 Certificates, “Security Object” that Includes these Identifying Information
- ❑ Expiration of SHA-1 Hash Algorithm and 1024 bit RSA After 12/31/2010

# Other SHA-1 Uses

- Broader use of SHA-1 by the Federal PKI for the implementation of digital signatures.

- Default hash algorithm used in the creation of signatures on all certificates issued by Federal PKI CAs.  SHA-1 is used (along with MD5) in the NIST National Software Reference Library.

- Hash algorithm used for certificates and other signed objects on CAC cards.

- SHA-1 is used in many other Federal applications, since it has been the recommended, FIPS-approved hash function for years.

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## Biometrics Decision for Special Publication 800-76

- Minutiae-based Rather Than Image-based Storage
- SP 800-76 Biometrics Storage Formats
  - ANSI/INCITS 378
  - EER Compatible With TSA Requirement
- Conformance Determination
  - MINEX?
  - NPIVP?

Thank you.

Questions….

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