

# **NIST Big Data Public Working Group**

## **Overview of NIST Big Data Interoperability Framework Volume 4**

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June 1, 2017

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AVP

Strategic Initiatives, Controls and  
Countermeasures

# Presentation Overview

- Volume Presentation Outline
- Volume 1, Definitions (Nancy Grady, SAIC)
- Volume 2, BD Taxonomies (Nancy Grady, SAIC)
- Volume 3, Use Cases and General Requirements (Geoffrey Fox, Indiana University)
- Volume 6, Reference Architecture (David Boyd, InCadence Corp.)
- **Volume 4, Security and Privacy (Arnab Roy, Fujitsu; Mark Underwood, AVP, Strategic Initiatives, Controls and Countermeasures)**
- Volume 8, Reference Architecture Interface (Gregor von Laszewski, Indiana University)
- Reference Architecture Software Implementation Environment and Demonstration (Gregor von Laszewski, Indiana University)
- Volume 7, Standards Roadmap (Russell Reinsch, Center for Government Interoperability)
- Volume 9, Adoption and Modernization (Russell Reinsch, Center for Government Interoperability)

# NBDIF Volume Overview

**Vol. 1 BD Definitions**  
Defines common language

**Vol. 2 BD Taxonomies**  
Hierarchy of NBDRA components

**Vol. 3 Use Cases & Vol. 5 Arch Survey**  
Info gathered; requirements extracted

**Vol. 6 NBDRA**  
Developed NBDRA

**Vol.4 S&P**  
Interwoven topics of S&P examined

**Vol. 7 Standards Roadmap**  
Examine standards wrt NBDRA

**Vol. 8 NBDRA Interfaces**  
Implementation of NBDRA

**Vol. 9 Adoption & Modernization**



# Volume Presentation Outline

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- For each volume
  - Scope of the volume
  - Brief recap of version 1
  - Highlights of version 2 accomplishments
  - Summary of version 2 areas needing contributions
  - Topics that could be considered for version 3

## Volume 4

# Document Scope

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- Provide a context from which to begin Big Data-specific security and privacy discussions
- Analyze/prioritize a list of challenging security and privacy requirements that may delay or prevent adoption of Big Data deployment
- Develop the Security and Privacy Fabric integrated into the NBDRA
- Develop Big Data security and privacy taxonomies
- Explore mapping between the Big Data security and privacy taxonomies and the NBDRA
- Security and Privacy (SnP) considerations impact all components of the NBDRA

## Volume 4

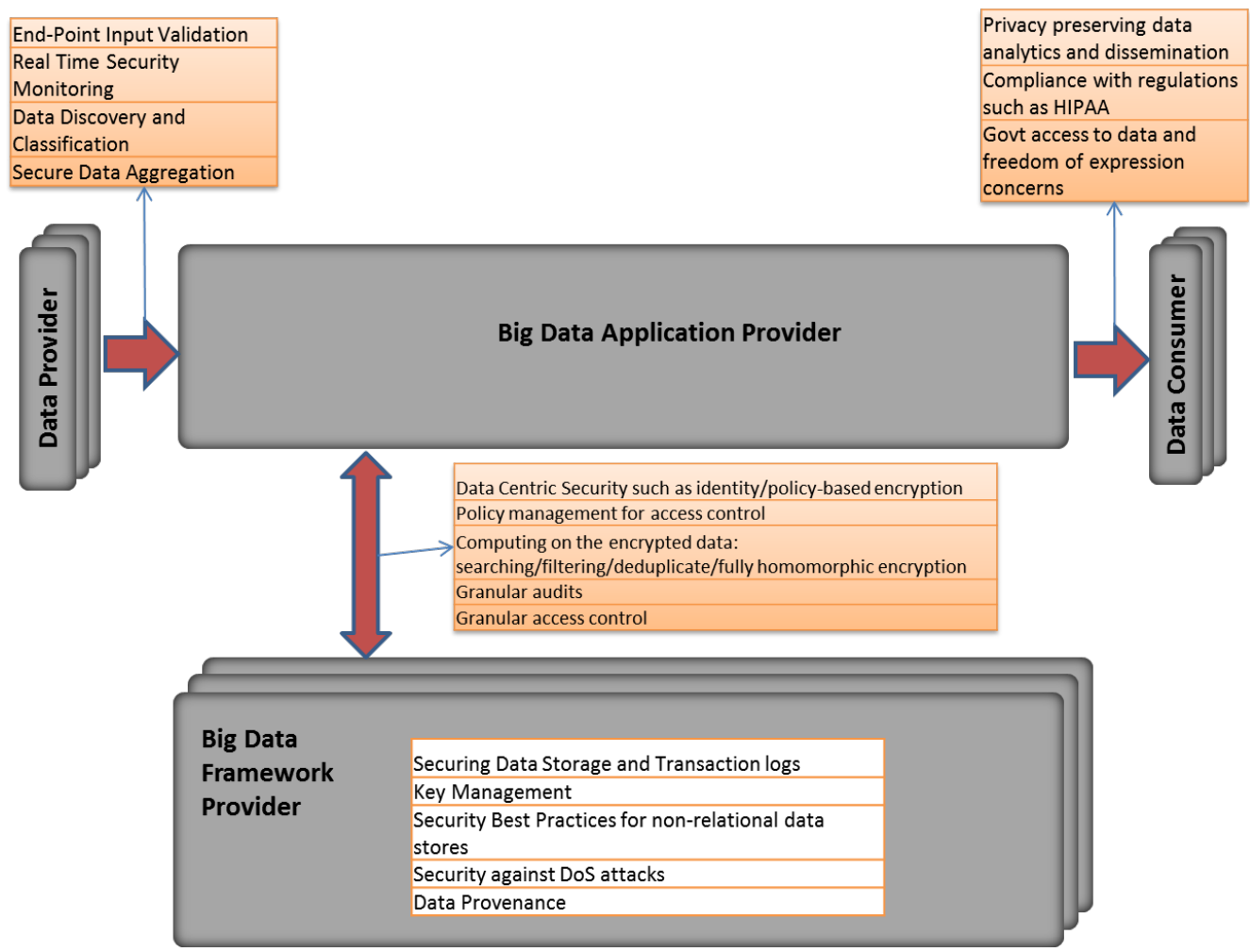
# Version 1 Overview

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- Provided an overview of SnP with respect to Big Data
- Collected security and privacy specific use cases
- Developed taxonomy of security and privacy topics
- Examined the interwoven nature of the SnP fabric with other NBDRA components
- Mapped collected SnP use cases to the NBDRA

# Volume 4

## Version 1 Reference Architecture



## Volume 4

# Version 2 Accomplishments

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- Introduced a safety framework, suitable for use by unaffiliated citizens, big data software architects and IT managers
- Expanded the cryptology discussion
- Expanded discussions of various topics such as the intersection of BD system management and SnP guidelines
- Identified guidelines for integrating Big Data systems dedicated to SnP
- Provided for phase-specific BD systems guidance
- Explored relevance of model-based systems engineering to Big Data SnP



## Volume 4

# Version 2 Opportunities for Contribution

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- **Submit completed Use Case Template 2**
- **Contribute to development of Safety Levels chart**
- **Build/enhance frameworks for Big Data referencing existing ISO and other standards for big data life cycle, audit, configuration management and privacy preserving practices (Section 2)**
- **Enhance discussion of emerging technology effects on BD SnP (Section 2.4)**
- **Contribute risk management text (section 5.9)**
- **Expand discussion of SnP approaches in analytics**
- **Increase references to SnP focused standards**
- **Integrate security fabric concepts into Vol 8**

# Domain-Specific SnP Safety Engineering



## Volume 4

# Proposed Version 3 Topics

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- **Big Data SnP Applications for Blockchain**
- **Features of BD SnP Dependency Models**
- **Features of security-aware Big Data IDEs**
- **Traceability Frameworks for “Human Bit”**
- **Self-Managed, Self-Monitoring Big Data Risk Frameworks**
- **Impact of AI on Big Data SnP (As User / As Consumer)**
- **Big Data SnP Microservices and API-First Design Patterns**
- **DevOps and Container SnP**
- **Orchestration of SnP Processes**
- **Big Data Analytics for SnP: Best Practices, Use Cases**
- **System Communicator Checklists**