

Privacy Technology Certification

Outline of the Body of Knowledge (BOK) for the Certified Information Privacy Technologist (CIPT)



I. Foundational Principles

- A. Privacy Risk Models and Frameworks
 - a. Nissenbaum's Contextual Integrity
 - b. Calo's Harms Dimensions
 - c. Legal Compliance
 - d. FIPPs
 - e. NIST/NICE frameworks
 - f. FAIR (Factors Analysis in Information Risk)
- B. Privacy by Design Foundational Principles
 - a. Full Life Cycle Protection
 - b. Embedded into Design
 - c. Full Functionality
 - d. Visibility and Transparency
 - e. Proactive not Reactive
 - f. Privacy by Default
 - g. Respect for Users
- C. Value Sensitive Design
 - a. How Design Affects Users
 - b. 14 Methods
 - c. Strategies for Skillful practice
- D. The Data Life Cycle
 - a. Collection
 - b. Use
 - c. Disclosure
 - d. Retention
 - e. Destruction

II. The Role of IT in Privacy

- A. Fundamentals of privacy-related IT
 - a. Organization privacy notice

- b. Organization internal privacy policies
- c. Organization security policies, including data classification policies and schema, data retention and data deletion
- d. Other commitments made by the organization (contracts, agreements)
- e. Common IT Frameworks (COBIT, ITIL, etc.)
- f. Data inventories
- g. Enterprise architecture and data flows, including cross-border transfers
- h. Privacy impact assessments (PIAs)

B. Information Security

- a. Transactions which collect confidential data for use in later processing activities
- b. Breach/disclosure incident investigations and responses—security and privacy perspectives
- c. Security and privacy in the systems development life cycle (SDLC) process
- d. Privacy and security regulations with specific IT requirements

C. The privacy responsibilities of the IT professional

- a. Providing feedback on policies
- b. Providing feedback on contractual and regulatory requirements
- c. Understanding how Information Technology and Information Security support information governance in an organization

III. Privacy Threats and Violations

A. During Data Collection

- a. Asking people to reveal personal information
- b. Surveillance

B. During Use

- a. Insecurity
- b. Identification
- c. Aggregation
- d. Secondary Use
- e. Exclusion

C. During Dissemination

- a. Disclosure
- b. Distortion
- c. Exposure
- d. Breach of Confidentiality
- e. Increased accessibility
- f. Blackmail
- g. Appropriation

D. Intrusion, Decisional Interference and Self Representation

- a. Behavioral advertising
- b. Cyberbullying
- c. Social engineering

E. Software Security

- a. Vulnerability management
- b. Intrusion reports
- c. Patches
- d. Upgrades
- e. Open-source vs Closed-source

IV. Technical Measures and Privacy Enhancing Technologies

A. Data Oriented Strategies

- a. Separate
 - i. Distribute
 - ii. Isolate
- b. Minimize
 - i. Exclude
 - ii. Select
 - iii. Strip
 - iv. Destroy
- c. Abstract
 - i. Group
 - ii. Summarize
 - iii. Perturb
- d. Hide
 - i. Restrict
 - ii. Mix
 - iii. Obfuscate
 - iv. Dissociate

B. Techniques

- a. Aggregation
 - i. Frequency and magnitude data
 - ii. Noise addition through differential privacy
 - iii. Differential identifiability
- b. De-identification
 - i. Anonymize
 - ii. Pseudonymize
 - iii. Labels that point to individuals
 - iv. Strong and weak identifiers
 - v. Degrees of Identifiability
 - vi. k -anonymity, l -diversity, t -closeness
 - vii. Tokenization
- c. Encryption
 - i. Algorithms and Keys
 - ii. Symmetric and Asymmetric
 - iii. Crypto design and implementation considerations
 - iv. Application or field encryption
 - v. Quantum encryption
 - vi. Public Key Infrastructure
 - vii. Homomorphic
 - viii. Polymorphic
 - ix. Mix networks
 - x. Secure multi-party computation

- xi. Private information retrieval
- d. Identity and access management
 - i. Limitations of access management as a privacy tool
 - ii. Principle of least-privilege required
 - iii. Role-based access control (RBAC)
 - iv. User-based access controls
 - v. Context of authority
 - vi. Cross-enterprise authentication and authorization models
 - vii. Federated identity
 - viii. Bring your own device (BYOD) concerns
- e. Authentication
 - i. Single/multi factor authentication
 - ii. Something you know (usernames, passwords)
 - iii. Something you are (biometrics, facial recognition, location)
 - iv. Something you have (tokens, keys)

C. Process Oriented Strategies

- a. Informing the Individual
 - i. Supply
 - ii. Notify
 - iii. Explain
- b. User Control
 - i. Consent
 - ii. Choose
 - iii. Update
 - iv. Retract
- c. Policy and Process Enforcement
 - i. Create
 - ii. Maintain
 - iii. Uphold
- d. Demonstrate Compliance
 - i. Log
 - ii. Audit
 - iii. Report

v. Privacy Engineering

- A. The Privacy Engineering role in the organization
- B. Privacy Engineering Objectives
 - a. Predictability
 - b. Manageability
 - c. Dissociability
- C. Privacy Design Patterns
 - a. Design patterns to emulate
 - b. Dark patterns to avoid
- D. Privacy Risks in Software
 - a. Risks
 - b. Countermeasures

VI. Privacy by Design Methodology

- A. The Privacy by Design Process
 - a. Goal Setting
 - b. Documenting Requirements
 - c. Understanding quality attributes
 - d. Identify information needs
 - e. High level design
 - f. Low level design and implementation
 - g. Impose controls
 - 1. Architect
 - 2. Secure
 - 3. Supervise
 - 4. Balance
 - h. Testing and validation
- B. Ongoing Vigilance
 - a. Code reviews
 - b. Code audits
 - c. Runtime behavior monitoring
 - d. Software evolution

VII. Technology Challenges for Privacy

- A. Automated decision making
 - a. Machine learning
 - b. Deep learning
 - c. Artificial Intelligence (AI)
 - d. Context aware computing
- B. Tracking and Surveillance
 - a. Internet monitoring
 - b. Web tracking
 - c. Location tracking
 - d. Audio and Video Surveillance
 - e. Drones
- C. Anthropomorphism
 - a. Speech recognition
 - b. Natural language understanding
 - c. Natural language generation
 - d. Chat bots
 - e. Robots
- D. Ubiquitous computing
 - a. Internet of Things (IoT)
 - b. Vehicular automation
 - c. Wearable devices
- E. Mobile Social Computing
 - a. Geo-tagging

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Approved by: Exam
Development Board

Effective Date: 01/01/20

Version
3.0.0

Approved on: 01/01/19

Supersedes: 2.1.2



b.Geo-social patterns