Privacy Engineering Objectives and Risk Model

Objective-Based Design for Improving Privacy in Information Systems

First Privacy Engineering Workshop

Purpose:

- Consider analogous models
  - Focus on objectives
- Identify distinctions

Key Outcomes:

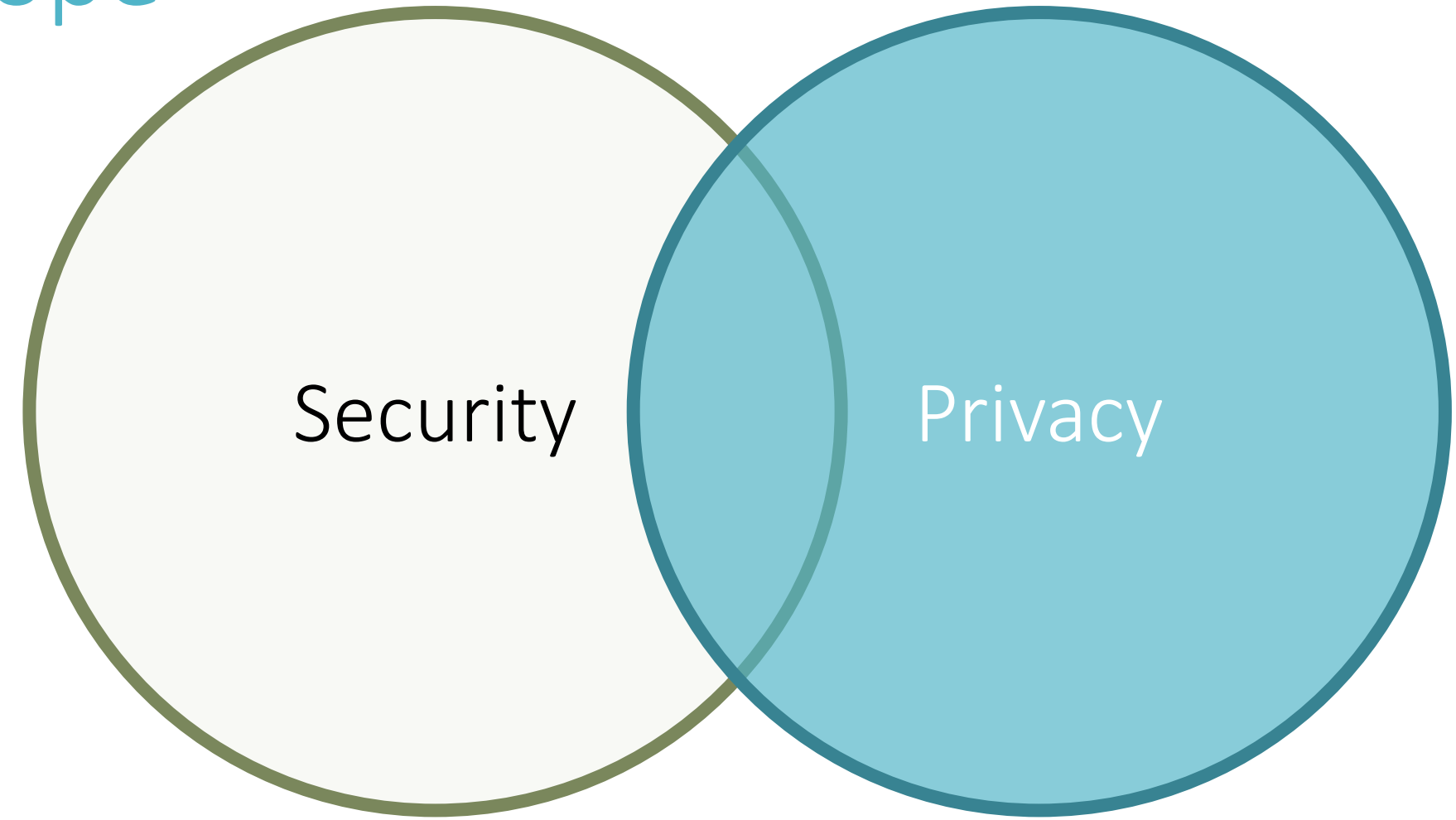
- Communication gap
- Positive interest in a risk management model

Model Privacy Risk Management Framework

Privacy Engineering Components

September Workshop
NISTIR

Scope



Key Terms

Privacy Engineering Objectives

Problematic Data Actions

Privacy Engineering

Data Lifecycle

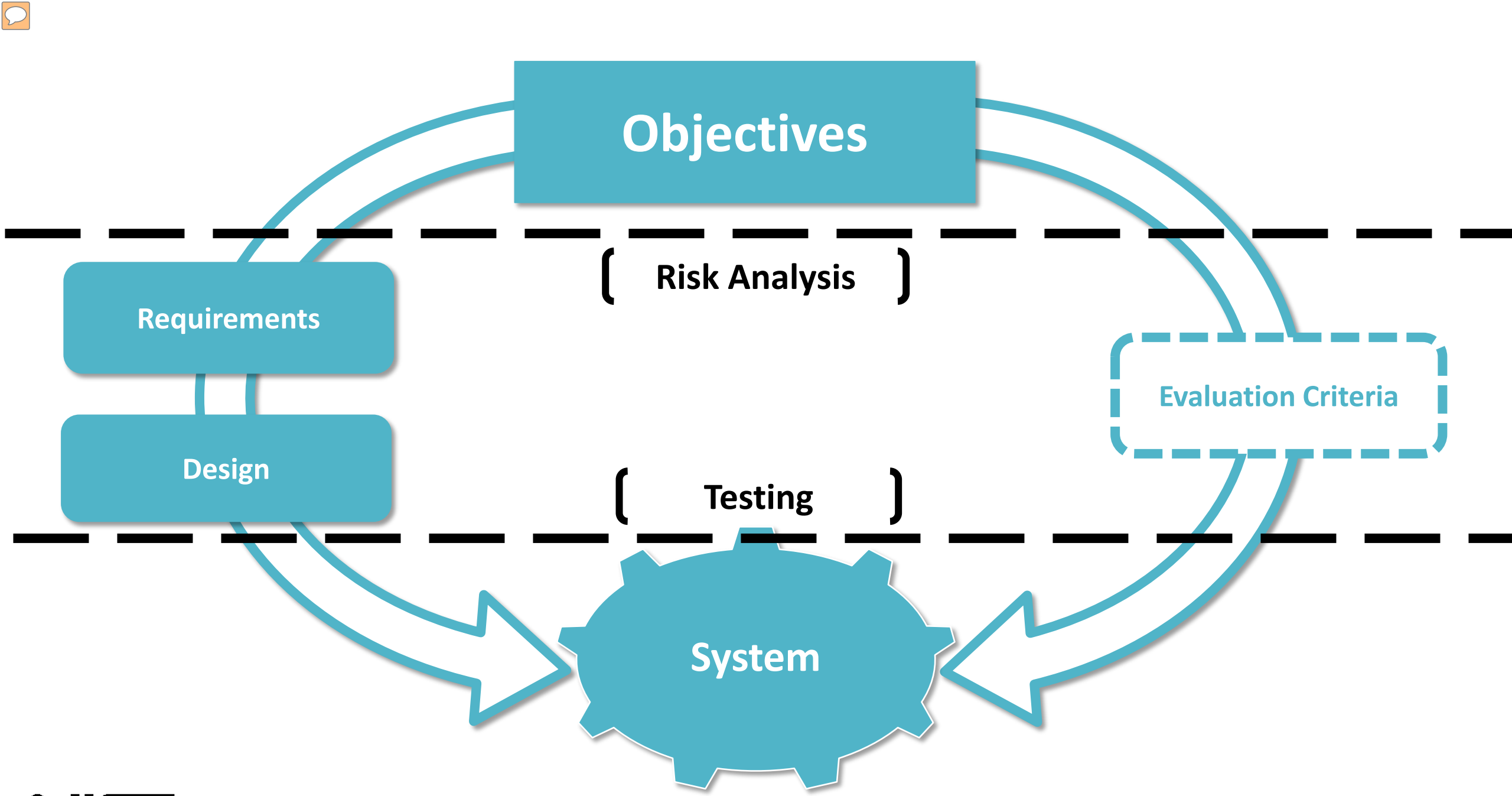
Context

Data Actions

Privacy Harms

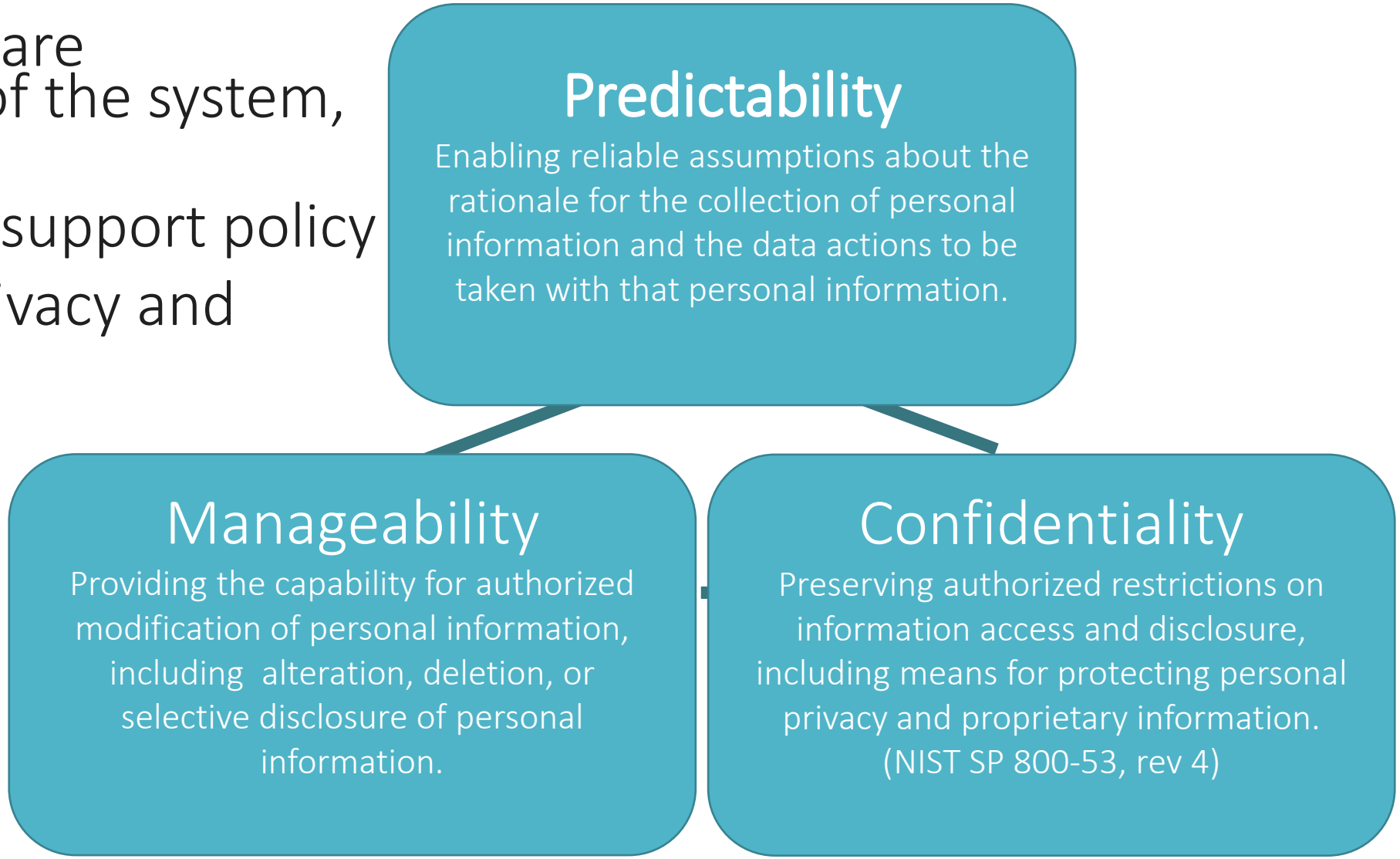
Privacy Engineering Objectives

Outcome-based objectives that guide design requirements to achieve privacy-preserving information systems.


Objectives
Risk Analysis
Requirements
Design
Evaluation Criteria
Testing
System

The Privacy Triad

- The objectives are characteristics of the system, not role-based.
- The objectives support policy
- Aligning the privacy and security overlap



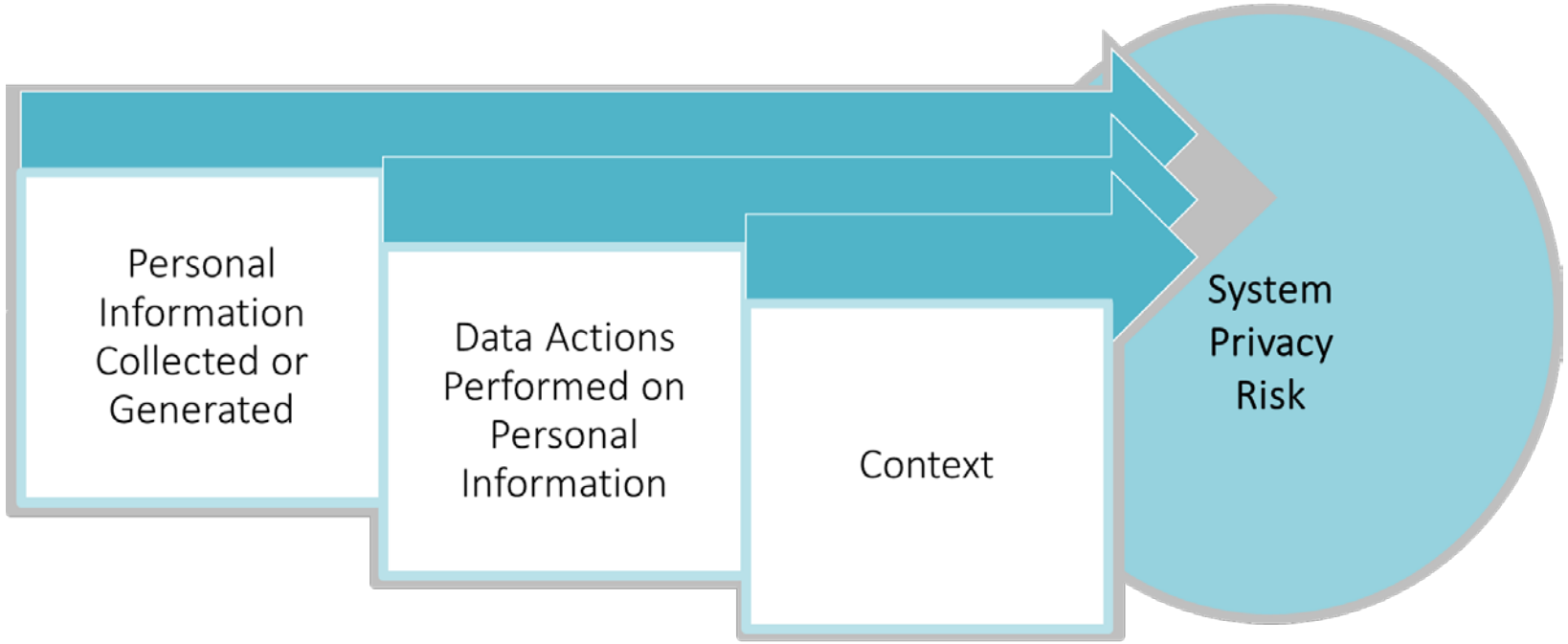
System Privacy Risk Model

Security Risk Equation

Security Risk = Vulnerability * Threat * Impact

System Privacy Risk Equation

System privacy risk is the risk of problematic data actions occurring



Personal Information Collected or Generated * Data Actions Performed on that Information * Context = System Privacy Risk

Context

"Context" means the circumstances surrounding a system's collection, generation, processing, disclosure and retention of personal information.

Problematic Data Actions and Privacy Harms

Distinguish data actions that give rise to harms and actual harms

Problematic Data Actions

Validation of the objectives and the risk model

Privacy Harms

Privacy Engineering Definition

Privacy engineering is a collection of methods to support the mitigation of risks to individuals of loss of self-determination, loss of trust, discrimination and economic loss by providing predictability, manageability, and confidentiality of personal information within information systems.

Information Security: *The protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability.*
[44 U.S.C., SEC. 3542]

NIST

Illustrative Mapping of Privacy Engineering Objectives to Problematic Data Actions

Data Lifecycle Phase	Normal Data Action	Problematic Data Action	Potential Harms
Predictability			
Collection	Service Initiation	Induced Disclosure	Power Imbalance, Loss of Autonomy
Processing	Aggregation	Unanticipated Revelation	Stigmatization, Power Imbalance, Loss of Trust, Loss of Autonomy
Processing	System monitoring	Surveillance	Power Imbalance, Loss of Trust, Loss of Autonomy, Loss of Liberty
Manageability			
Disclosure	Authorized Attribute Sharing	Distortion	Stigmatization, Power Imbalance, Loss of Liberty
Disposal	Normal Account Deletion	Unwarranted Restriction	Exclusion, Economic Loss, Loss of Trust
Confidentiality			
Use	Authorized Use	Appropriation	Loss of Trust, Economic Loss, Power Imbalance
Retention	Secure Storage	Insecurity	Economic Loss, Stigmatization

Next Steps

Publish a NISTIR, anticipated 2015