Empowering privacy and security in non-trusted environments

Objectives

WITDOM aims at producing a framework for end-to-end protection of data in untrusted and fast-evolving ICT-based environments.

- Privacy enhancing techniques, perturbation mechanisms and privacy metrics
- Privacy-preserving cryptographic techniques supporting encrypted processing
- Cryptographic techniques for integrity and verifiability of outsourced processes
- European legal landscape.

Scenarios

The WITDOM framework is instantiated and validated in two privacy-sensitive application scenarios:

### e-Health

Genetic/proteomic data protection, shared for large-scale research analyses and outsourced clinical analysis.

### Financial Services

Protection of large-scale outsourced financial data storage and processing (e.g., financial risk calculation or fraud detection).

Outcomes

#### General Outcomes

**Framework**
- Methodology for analysis and assessment of end-to-end privacy/security
- Objective privacy metrics and quantifiable evaluation mechanisms
- Analysis and formalization guidelines and methods for the analysis of security requirements and trust relationships
- Privacy and security by design and user-empowered architectures for outsourced/distributed environments

**Implementation Level**

**Toolkit and prototypes**
- Privacy-preserving toolkit implementing privacy-preserving primitives, protocols, privacy-enhancing techniques (PETs) and formalized preferences for user-centric verifiable outsourced processing
- Multidisciplinarily assessed prototypes for eHealth and Banking scenarios, making use of the toolkit and showcasing the net advance and impact of the general and practical outcomes in two privacy-aware scenarios

**Practical Level**

**Platform**
- Definition and enforcement of user-centric privacy-preferences
- Security and privacy analysis for outsourced/distributed eHealth and Financial services scenarios, instantiated architectures
- Resource-efficient cryptographic primitives, protocols and PETs for outsourced processing of sensitive data (addressing the trade-off between good performance and strong cryptographic protection)
- Efficient cryptographic verifiability mechanisms for user-empowered outsourced processing
- Evaluation of the developed primitives, quantitative assessment of the net advances in utility, efficiency and privacy/security

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