Scalable Policy-aware Linked Data Architecture for privacy, transparency and compliance (SPECIAL)

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ESWC Project Networking
Data subjects who would like to declare, monitor and optionally revoke their (often not explicit) preferences on data sharing

Regulators who can leverage technical means to check compliance with the GDPR

Companies whose business models rely on personal data and for which the GDPR is both a challenge and an opportunity
SPECIAL Aims

Data & Data Driven Services

Regulators
Legal Policies
Privacy Preferences
Contracts/ Terms of use

Customers/ Service Users

Companies/ Service Providers

ULD

...
SPECIAL Use Cases

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KNOW YOUR CUSTOMER.
SPECIAL leverages past infrastructure and lessons learned

- **Big Data Europe** scalability and elasticity
- **PrimeLife** policy languages, access control policies, release policies and data handling policies
- The **Platform for Privacy Preferences Project (P3P)** and the **Open Digital Rights Language (ODRL) vocabularies**
Usage policy language
Syntax and expressivity

• Usage policy language, which can be used to express both the data subjects’ consent, data controllers usage requests, fragments of the GDPR, and business policies

• The foundation of the policy language was the Minimal Core Model (MCM)

• We propose a new policy language that extensively re-uses standards based privacy-related vocabularies

• We are able to leverage existing Web Ontology Language (OWL) based reasoners out of the box
Usage policy language
SPECIAL resources

The SPECIAL Usage Policy Language
version 0.1

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Abstract
This document specifies usage policy language of SPECIAL, both the data subjects’ consent and the data usage policy by a computer, so as to automatically verify that the usage is compliant with the D2.1 Policy Language V1.

The ontology defined in this document is publicly available online at:
http://www.specialprivacy.eu/langs/usage-policy#

Vocabulary …/langs/usage-policy#

• Detailed in D2.1 Policy Language V1
• Available for download via the SPECIAL website https://www.specialprivacy.eu/langs/usage-policy
• An unofficial draft specification has been published online http://purl.org/specialprivacy/policylanguage
• Feeds into the standardisation efforts conducted in the W3C Data Privacy Vocabularies and Controls Community Group
Provenance/event information

SPECIAL resources

- Development of a log vocabulary that reuses well-known vocabularies such as PROV for representing provenance metadata
- Demonstrate how provenance can be used to support transparency in data value chains
Transparency and compliance checking platforms

- Data processing and sharing event logs are stored in the Kafka distributed streaming platform, which in turn relies on Zookeeper for configuration, naming, synchronization, and providing group services.

- We assume that consent updates are infrequent and as such usage policies and the respective vocabularies are represented in a Virtuoso triple store.

- The compliance checker, which includes an embedded

- A HermiT reasoner uses the consent saved in Virtuoso together with the application logs provided by Kafka to check that data processing and sharing complies with the relevant usage control policies.

- As logs can be serialized using JSON-LD, it is possible to benefit from the faceting browsing capabilities of Elasticsearch and the out-of-the-box visualization capabilities provided by Kibana.
Data Privacy, Vocabularies and Controls Community Group (DPVCG)

- Launched on the 25th of May 2018
- Presentation at MyData on the 31st of August-2018
- F2F in Vienna on the 3rd and 4th of December
- The current goal is to agree on first public drafts of minimal sets of vocabularies with first stable working drafts being reached latest on 25 May 2019.

https://www.w3.org/community/dpvcg/
Exploitable Results

- **Resources**
  - The SPECIAL Usage Policy Language
    [http://purl.org/specialprivacy/policylanguage](http://purl.org/specialprivacy/policylanguage)
  - The SPECIAL Vocabularies
    [https://www.specialprivacy.eu/vocabs](https://www.specialprivacy.eu/vocabs)
  - The SPECIAL Policy Log Vocabulary
    [http://purl.org/specialprivacy/splog](http://purl.org/specialprivacy/splog)

- **SPECIAL Ex-Post Compliance Checking**
  - Demonstrates how usage policies together with event logs can be used to perform ex-post compliance checking

- **SPECIAL Consent and Transparency Interfaces**
  - Various consent user interfaces and the transparency dashboard
  - Guidelines for legally compliant consent retrieval