The SPECIAL Policy Log Vocabulary

A vocabulary for privacy-aware logs, transparency and compliance

Javier D. Fernández, Piero Bonatti, Wouter Dullaert, Sabrina Kirrane, Uros Milosevic, Axel Polleres

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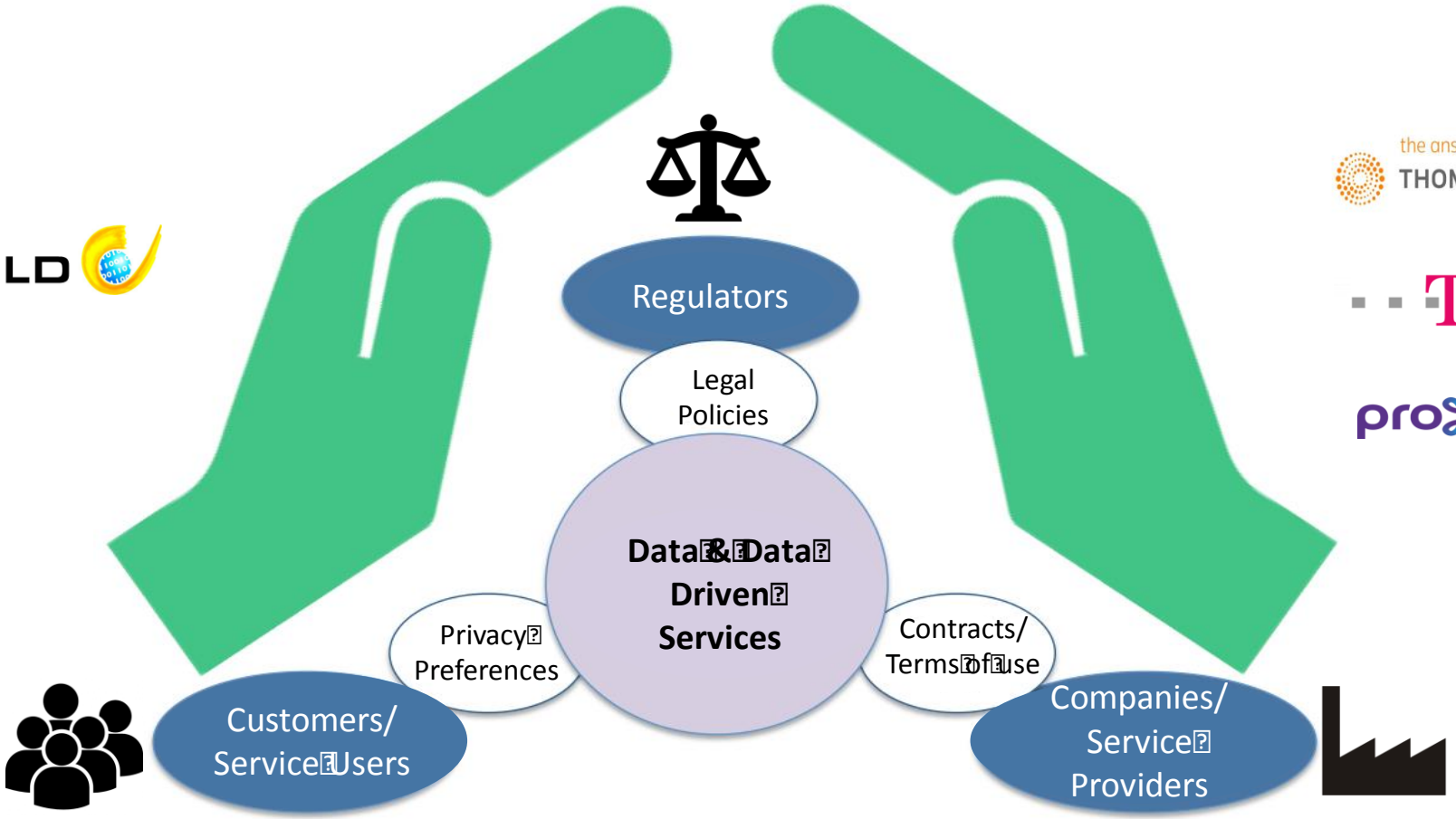
SPECIAL Overview

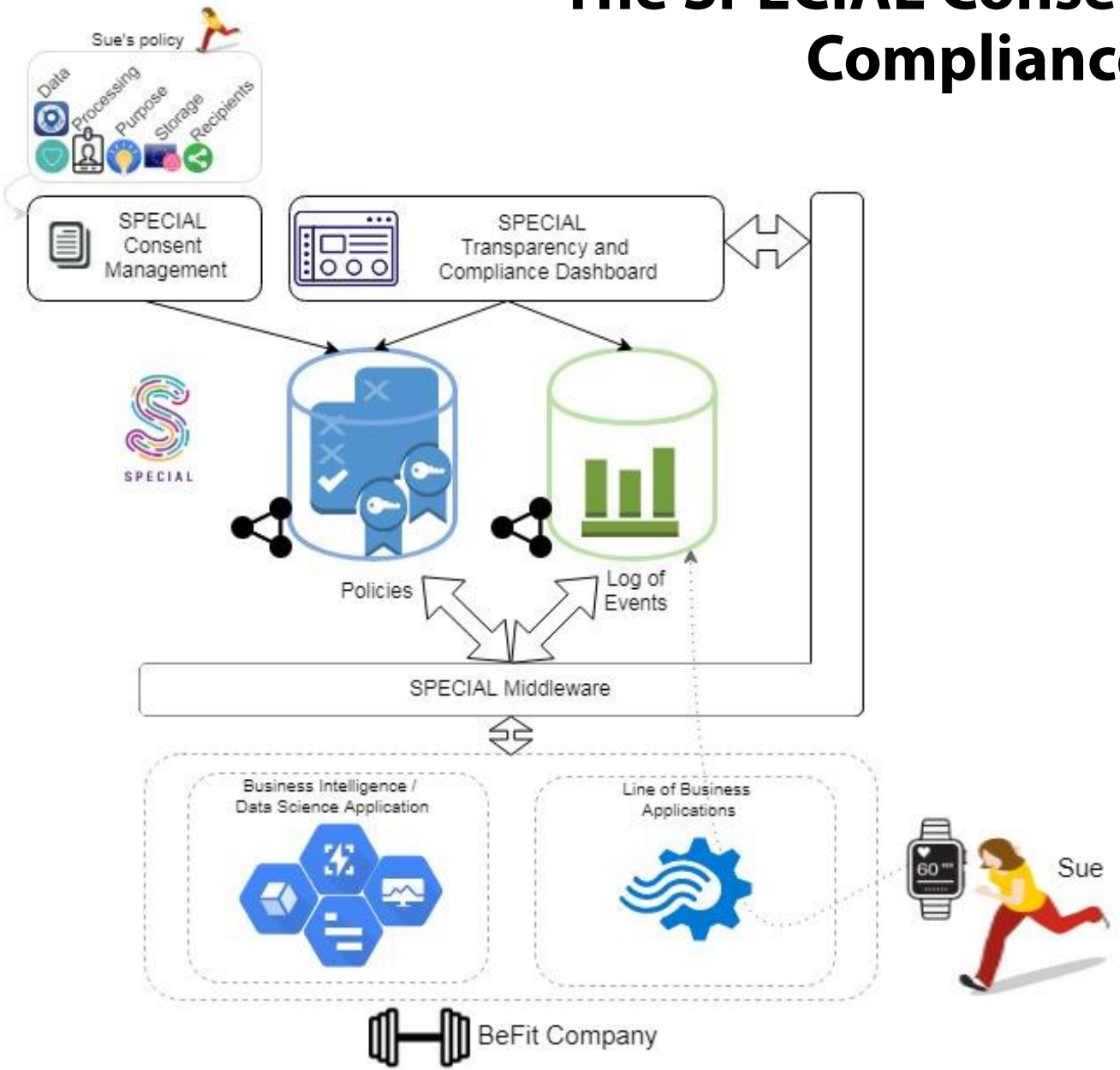
Aims



SPECIAL Overview
Objectives

- Policy management framework
  - ❖ Gives **users control** of their personal data
  - ❖ Represents **access/usage policies** and **legislative requirements** in a **machine readable format**
- **Transparency and compliance framework**
  - ❖ **Provides information on how data is processed and with whom it is shared**
  - ❖ **Allows data subjects to take corrective action**
- Scalable policy-aware Linked Data architecture
  - ❖ Build on top of the Big Data Europe (BDE) platform **scalability and elasticity mechanisms**
  - ❖ Extended BDE with **robust policy, transparency** and **compliance protocols**

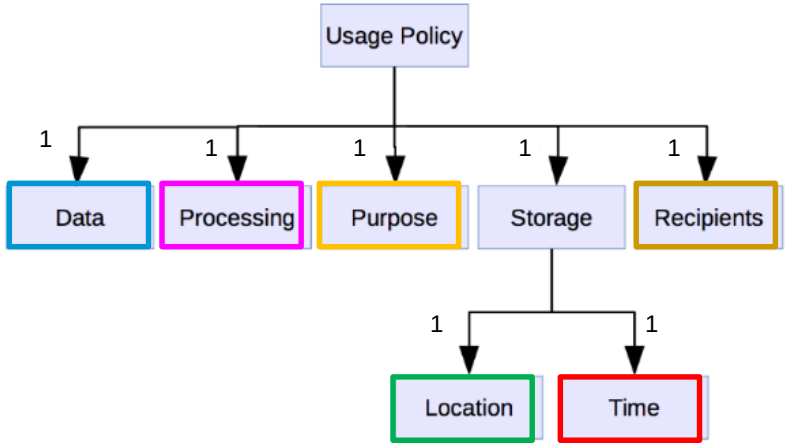
The SPECIAL Consent, Transparency and Compliance framework



Privacy policy formalization

- Record **usage policies**
- SPECIAL is releasing the SPECIAL policy language
  - Based on OWL EL

“**Heart rate** and **location data** are **collected** and **analysed** to create a **user profile** for the purpose of issuing **recommendations**. Profiles are stored **indefinitely** in the **EU** by the data controller and released to **third parties**.”




```
EquivalentClasses(<http://company.org/consents/Recommendations>
ObjectIntersectionOf(
        ObjectSomeValuesFrom( spl:hasData
                ObjectUnionOf(
                ex:HeartRate svd:Location ))
        ObjectSomeValueFrom( spl:hasProcessing
                        ObjectIntersectionOf(svpr:Collect svpr:Analyze px:Profiling ))
        ObjectSomeValueFrom( spl:hasPurpose ex:Recommendation)
        ObjectSomeValueFrom( spl:hasStorage
                ObjectIntersectionOf(
                        ObjectSomeValuesFrom( spl:hasLocation
                                ObjectIntersectionOf( svl:OurServers svl:EU ))
                        DataSomeValuesFrom( spl:durationInDays
                                DatatypeRestriction( xsd:integer
                                xsd:mininclusive "0"^^xsd:integer ))))
        ObjectSomeValueFrom( spl:hasRecipient svr:AnyRecipient )))
```

```
ex:Recommendation rdfs:subClassOf svpu:Marketing .
```

Transparency framework

- Record **data processing and sharing events**
- We have developed a vocabulary for the logs (SPLOG)
  - http://purl.org/specialprivacy/splog

Unofficial Draft

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ReSpec

The SPECIAL Usage Policy Language

version 0.1

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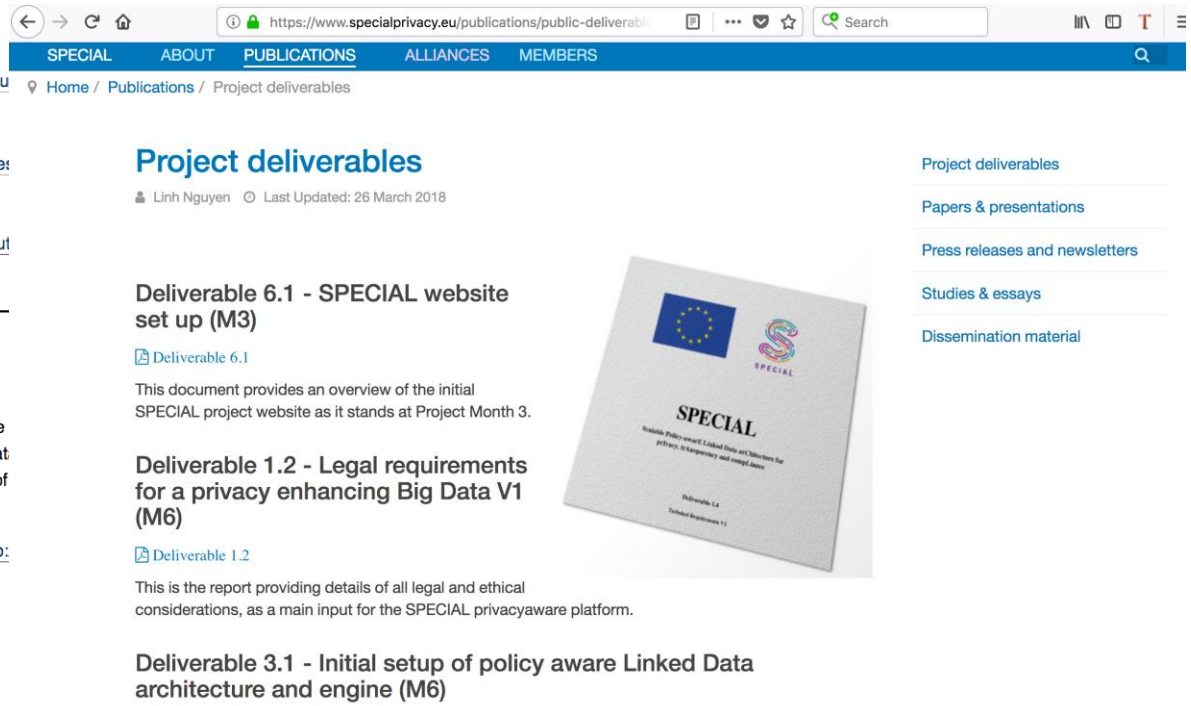
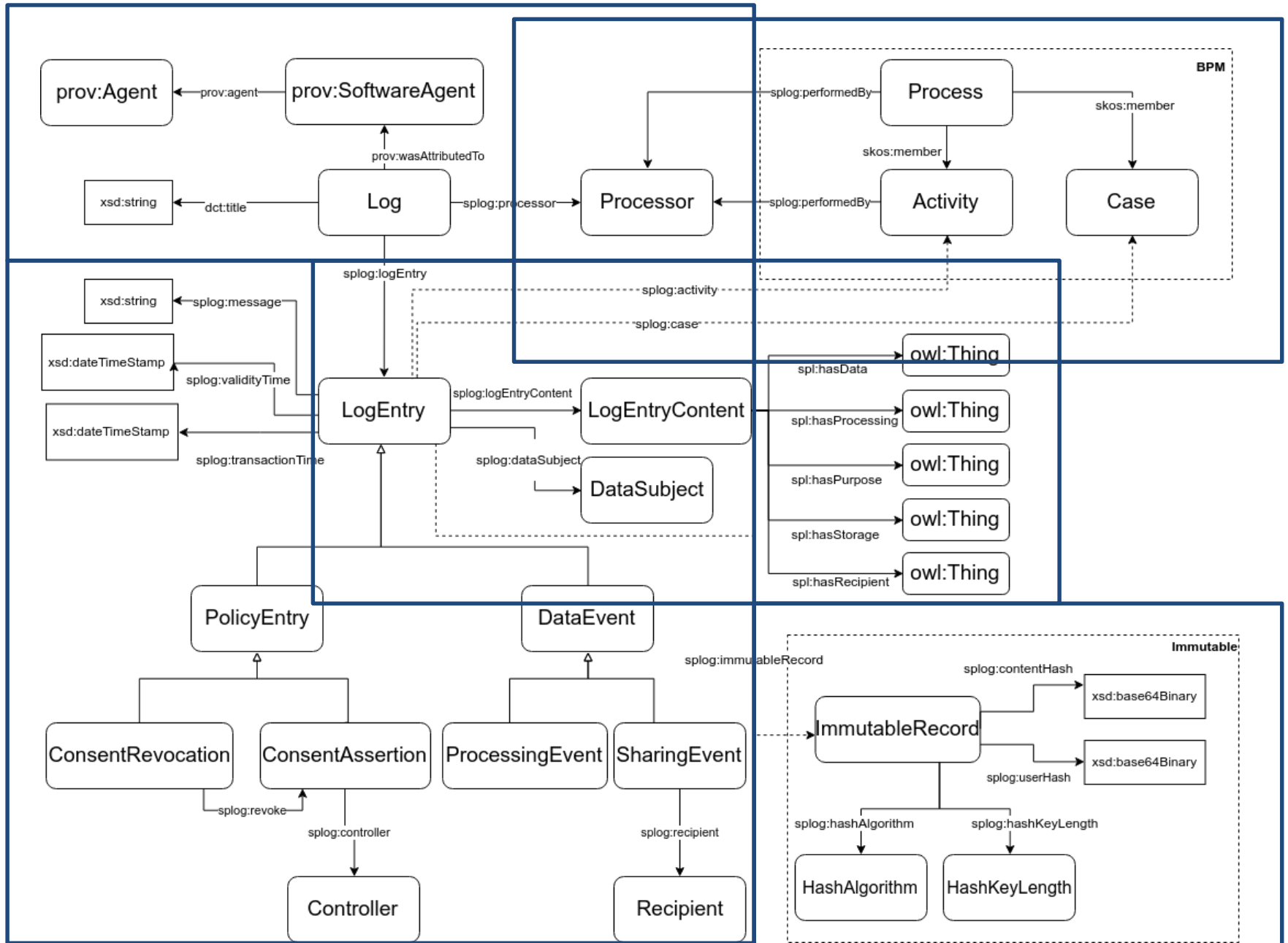
Abstract

This document specifies usage policy language of SPECIAL. The
both the data subjects' consent and the data usage policies of dat
able by a computer, so as to automatically verify that the usage of
consent.

The ontology defined in this document is publicly available at http:
policy.




prov:Agent
prov:agent
prov:SoftwareAgent
prov:wasAttributedTo
xsd:string
dct:title
Log
splog:processor
Processor
BPM
splog:performedBy
Process
skos:member
skos:member
splog:performedBy
Activity
Case
splog:logEntry
splog:activity
splog:case
xsd:string
splog:message
xsd:dateTimeStamp
splog:validityTime
LogEntry
splog:logEntryContent
LogEntryContent
xsd:dateTimeStamp
splog:transactionTime
splog:dataSubject
DataSubject
spl:hasData
owl:Thing
spl:hasProcessing
owl:Thing
spl:hasPurpose
owl:Thing
spl:hasStorage
owl:Thing
spl:hasRecipient
owl:Thing
PolicyEntry
DataEvent
splog:immutableRecord
Immutable
splog:contentHash
xsd:base64Binary
ImmutableRecord
xsd:base64Binary
splog:userHash
ConsentRevocation
ConsentAssertion
ProcessingEvent
SharingEvent
splog:hashAlgorithm
splog:hashKeyLength
splog:revoke
splog:controller
splog:recipient
HashAlgorithm
HashKeyLength
Controller
Recipient

Transparency framework

- Record **data processing and sharing events**
- We have developed a vocabulary for the logs (SPLOG)
  - http://purl.org/specialprivacy/splog

befit:BeFitLog a splog:Log;

dct:title	"Log of BeFitDatabaseEurope"@en;
dct:description	"This contains events on BeFitDatabaseEurope tracking devices geo-located in Europe"@en;
dct:issued	"2018-02-14"^^xsd:date;
prov:wasAttributedTo	befit:BeFitDatabaseEurope ;
splog:processor	befit:Us .

Transparency framework

- Record **data processing and sharing events**
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befit:entry3918 a splog:ProcessingEvent;

dct:title	"Collection of new device position"@en;
splog:dataSubject	befit:Sue ;
dct:description	"We collected a new position of your BeFit device in our database in Europe"@en;
splog:transactionTime	"2018-01-10T13:20:50Z"^^xsd:dateTimeStamp;
splog:validityTime	"2018-01-10T13:20:00Z"^^xsd:dateTimeStamp;
splog:message	"Tracking position by GPS... collected!" ;
splog:eventContent	befit:content3918 ;

Transparency framework

- Record **data processing and sharing events**
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  - http://purl.org/specialprivacy/splog

befit:content3918 a splog:LogEntryContent;
dct:description "Location data are collected by a BeFit device only for the health purpose of the service"@en;
spl:hasData svd:Location;
spl:hasProcessing befit:SensorGathering;
spl:hasPurpose befit:HealthTracking;
spl:hasStorage [has:location svl:OurServers];
spl:hasRecipient [a svr:Ours].

befit:SensorGathering rdfs:subClassOf svpr:Collect .
befit:HealthTracking rdfs:subClassOf svpu:Health .

Transparency framework

- Record **data processing and sharing events**
- We have developed a vocabulary for the logs (SPLOG)
  - http://purl.org/specialprivacy/splog
- We have a running prototype (ESWC 2018)

Discussion

- lack of specific and standard **vocabularies** for representing **privacy-related events**
- It should be possible to describe the event content at different **granularities**
    - from a simple **taxonomy** (stating the type of data, processing, etc.), to the most fine-grained description of the **actual data** associated to the event;
- **Interoperability/standard APIs**
    - different systems within a company and/or different companies

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