

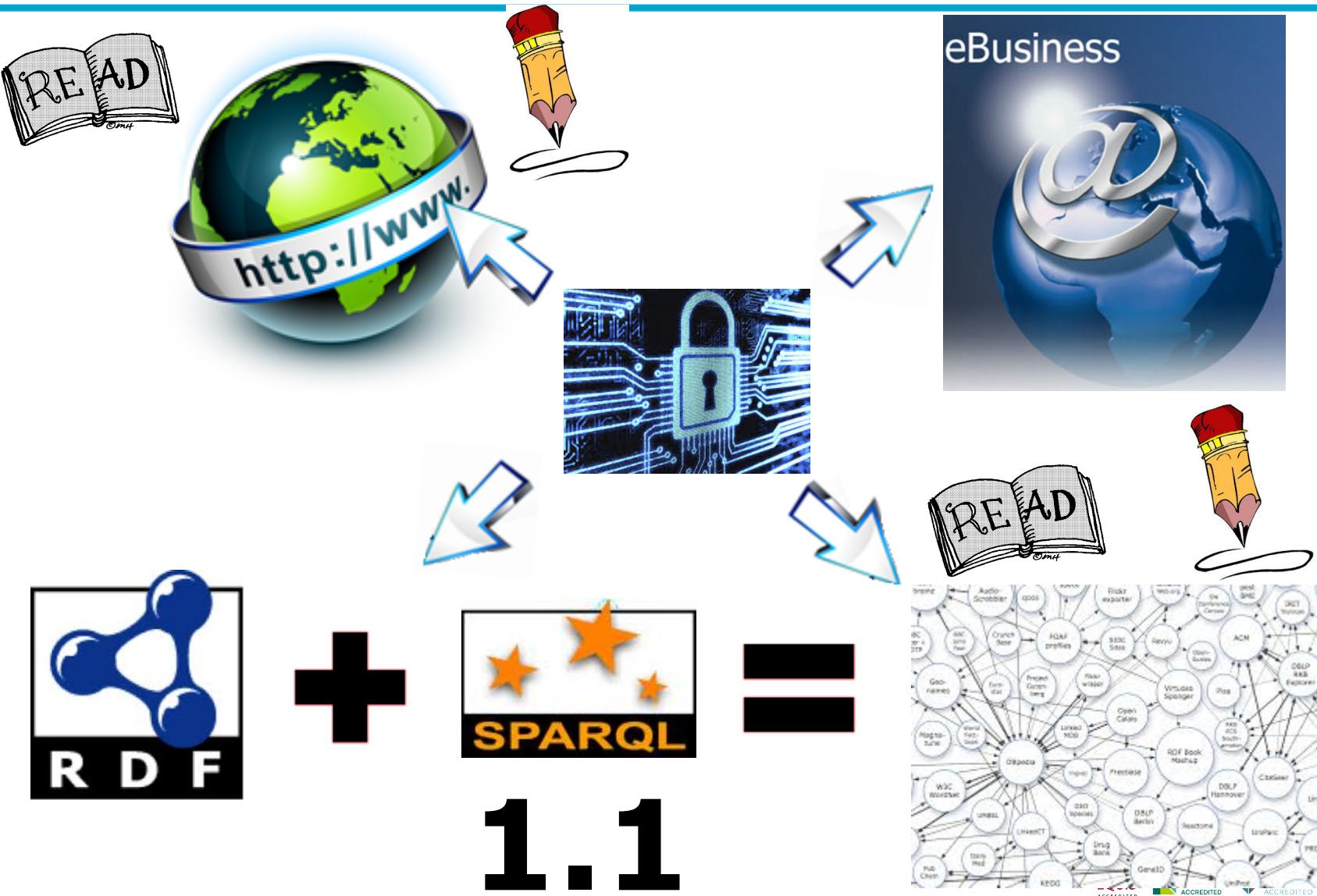
Policy Based Research

Sabrina Kirrane
Vienna University of Economics & Business
MIT 27th September 2018





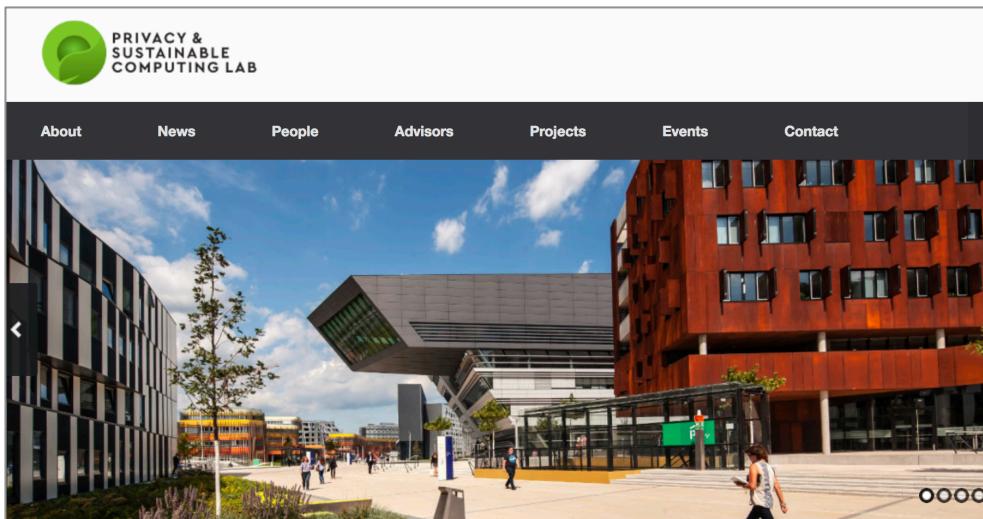
Access Control for Linked Data



Privacy & Sustainable Computing

A multidisciplinary perspective...

- **Privacy & Sustainable Computing Lab**
- Launched September 2016: launch event with various important stakeholders: technologists, standardization, activists...
- Mission: Developing sustainable and privacy-preserving computer systems by bringing together computer science & human-centric behavioral science



Privacy & Sustainable Computing Lab

The increasing ubiquity of IT and data in corporate infrastructures and innovation endeavours, as well as the rising pervasiveness of computing in our daily lives, leads to the question how information systems can be build in a private, secure, ethical and value-driven manner. Current IT systems often fail to deliver on these requirements, commonly characterised as "soft" requirements, while aspects of technical functionality dominate.

The Privacy & Sustainable Computing Lab aims at setting new standards in research, education and practice to address ethical issues in computing.

<http://www.privacylab.at/>



**Dr. Ben
Wagner
(Director)**



**Dr. Sabrina
Kirrane
(Mgt Board)**

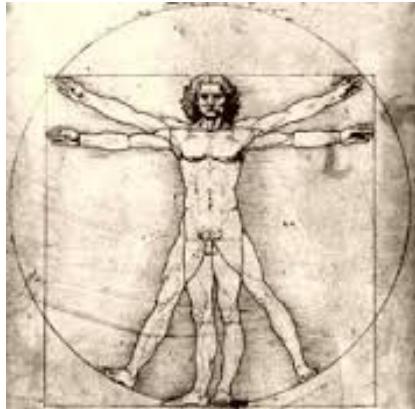


**Prof. Sarah
Spiekermann
(Mgt Board)**



**Prof. Axel
Polleres
(Mgt Board)**

Online Privacy



Humanities

Net Neutrality

Fragmentation

Open Data

Open Standards

Public Policy and Legislation Ethical Design



Computer Science

Big Data Analytics

Artificial Intelligence

Data Science



The General Data Protection Regulation (GDPR)

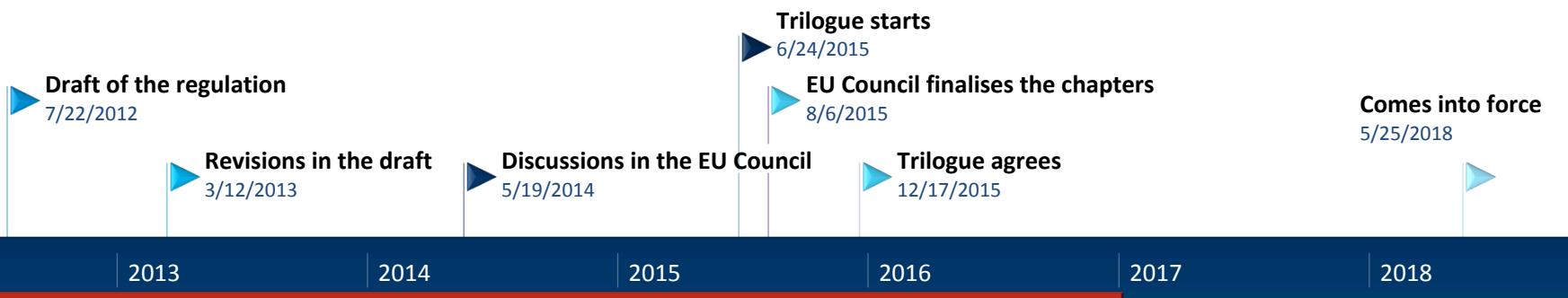
What does GDPR mean for your business?



The General Data Protection Regulation (GDPR) is a new EU data protection regulation that will come into force on 25 May 2018.

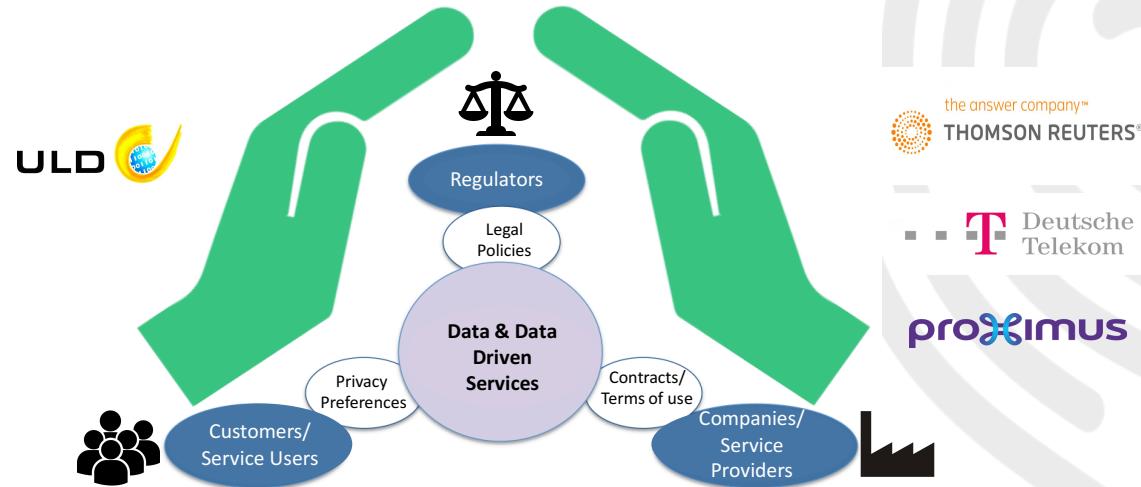
"The GDPR emphasises transparency, security and accountability by data controllers and processors, while at the same time standardising and strengthening the right of European citizens to data privacy."

[Source: Dataprotection.ie]





Scalable Policy-awarE Linked Data arChitecture for prIVacy, trAnsparency and compLiance



Research and innovation Action
9 partners from 6 countries
January 2017 to December 2019
3,991,389 €



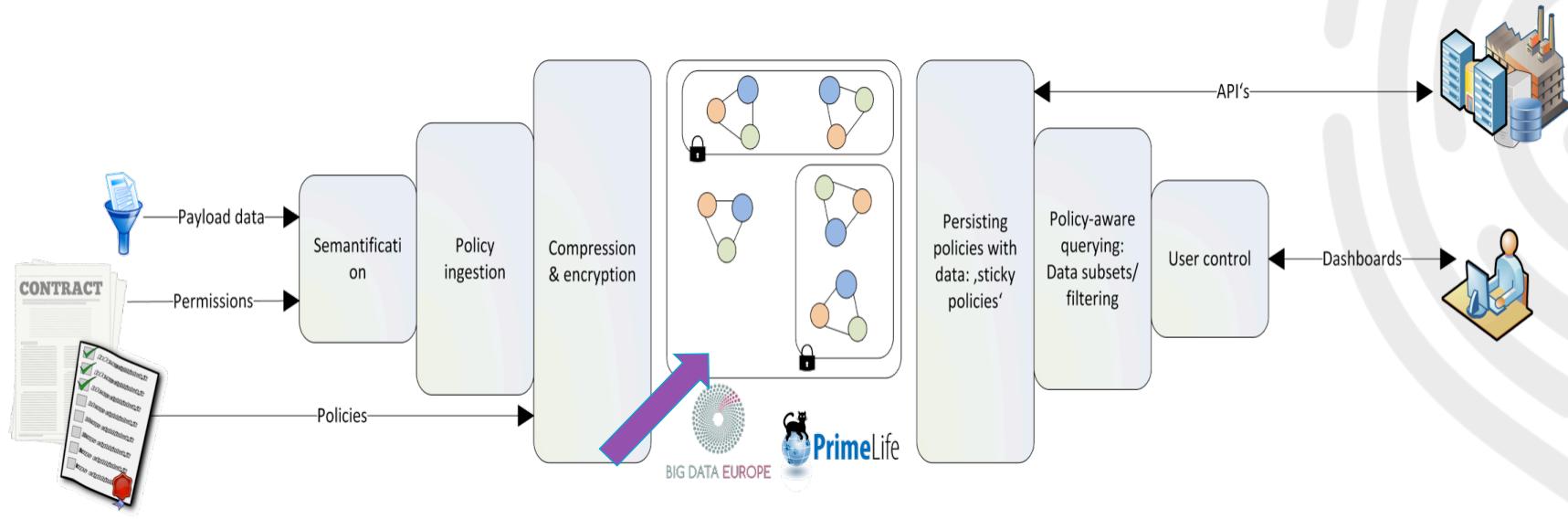
<https://www.specialprivacy.eu/>



Horizon 2020
European Union funding
for Research & Innovation

This project receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement
No. 731601





SPECIAL uses the **Linked Data paradigm**

- ❖ All data items are identified by **Internationalised Resource Identifiers** (IRI's)
- ❖ By using HyperText Transfer Protocol (HTTP) IRI's **everything is potentially linkable**
- ❖ IRI's allow SPECIAL to associate **usage constraints** with personal data at different levels of granularity

A Scalable Consent, Transparency and Compliance Architecture

Sabrina Kirrane, Javier D. Fernández, Wouter Dullaert, Uros Milosevic, Axel Polleres, Piero Bonatti, Rigo Wenning, Olha Drozd and Philip Raschke

Proceedings of the Posters and Demos Track of the Extended Semantic Web Conference (ESWC 2018)

<https://www.specialprivacy.eu/project-news/134-architecture-video>



PIRATES HOOKED Bought a Kodi box? You're probably under investigation, UK's official copyright protectors warn

As UK officials try to tackle copyright infringement, people who buy illegal IPTV boxes 'may be investigated'

EXCLUSIVE By Margi Murphy

4th May 2017, 11:05 am | Updated: 4th May 2017, 11:06 am



COMMENT NOW

KODI box owners "may be investigated" as part of a crackdown on copyright material across the UK.

That's according to the chief executive of FACT, the federation against copyright theft, who warned that soon "some poor, unfortunate person may be the first that is made an example of".



Recent European Court of Justice ruling means:

Anyone caught streaming TV shows, films and sports events illegally using websites, torrents and Kodi add-ons could technically face a decade behind bars.



Amazon and the Premier League are also cracking down on illegal streams fed to media players running Kodi / REUTERS/Tobias Schwarz

Authorities are becoming increasingly concerned about media players loaded with the open-source software and a variety of third-party add-ons

<http://www.independent.co.uk/life-style/gadgets-and-tech/news/digital-economy-act-kodi-stream-illegal-users-prison-10-years-sentence-copyright-data-sharing-a7716131.html>



NETFLIX

YouTube



<https://www.dalicc.net/>

the guardian



OpenStreetMap

amazon.com.



GeoNames



Facebook Graph API

TOMTOM

Socrata

DALICC is funded by the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) under the program "ICT of the Future" between November 2016 - October 2018. More information <https://iktderzukunft.at/en/>

Public
Domain

Permissive

Weakly
Protective

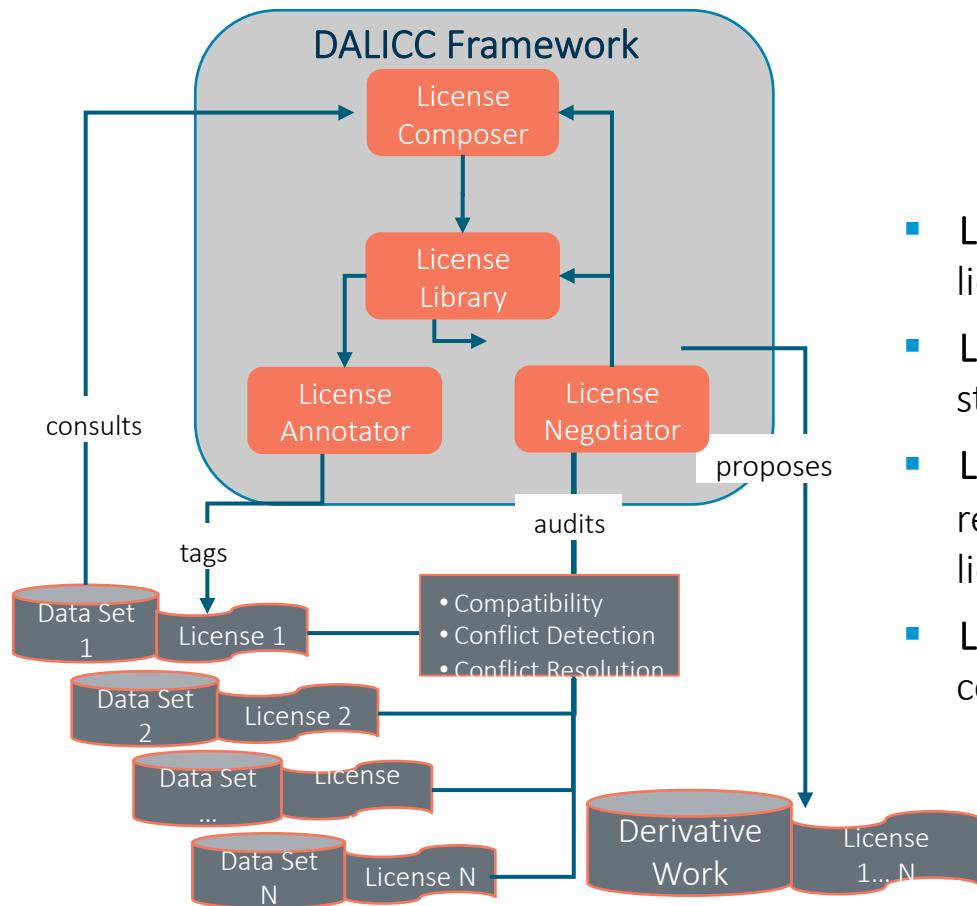
Strongly
Protective

Proprietary

[ODbL](#)
[CC-BY](#)
[CC-BY-SA](#)
[IMDB License](#)
[TomTom License](#)

License Spectrum

No rights reserved ----- Some rights reserved ----- All rights reserved



- **License Composer:** Lets you create customised licenses
 - **License Library:** Lets you choose from a set of standard licenses
 - **License Annotator:** Provides you with a machine-readable and human-readable version of your license
 - **License Negotiator:** Checks compatibility, detects conflicts and supports conflict resolution

Modeling and Reasoning over Data Licenses

Oleksandra Panasiuk, Simon Stevskal, Giray Havur, Anna Fensel and Sabrina Kirrane

Proceedings of the Posters and Demos Track of the Extended Semantic Web Conference (ESWC 2018)

Consent and Control Interfaces

Purpose Data Storage Sharing Processing

On 3rd parties' infrastructures / Purpose

Help

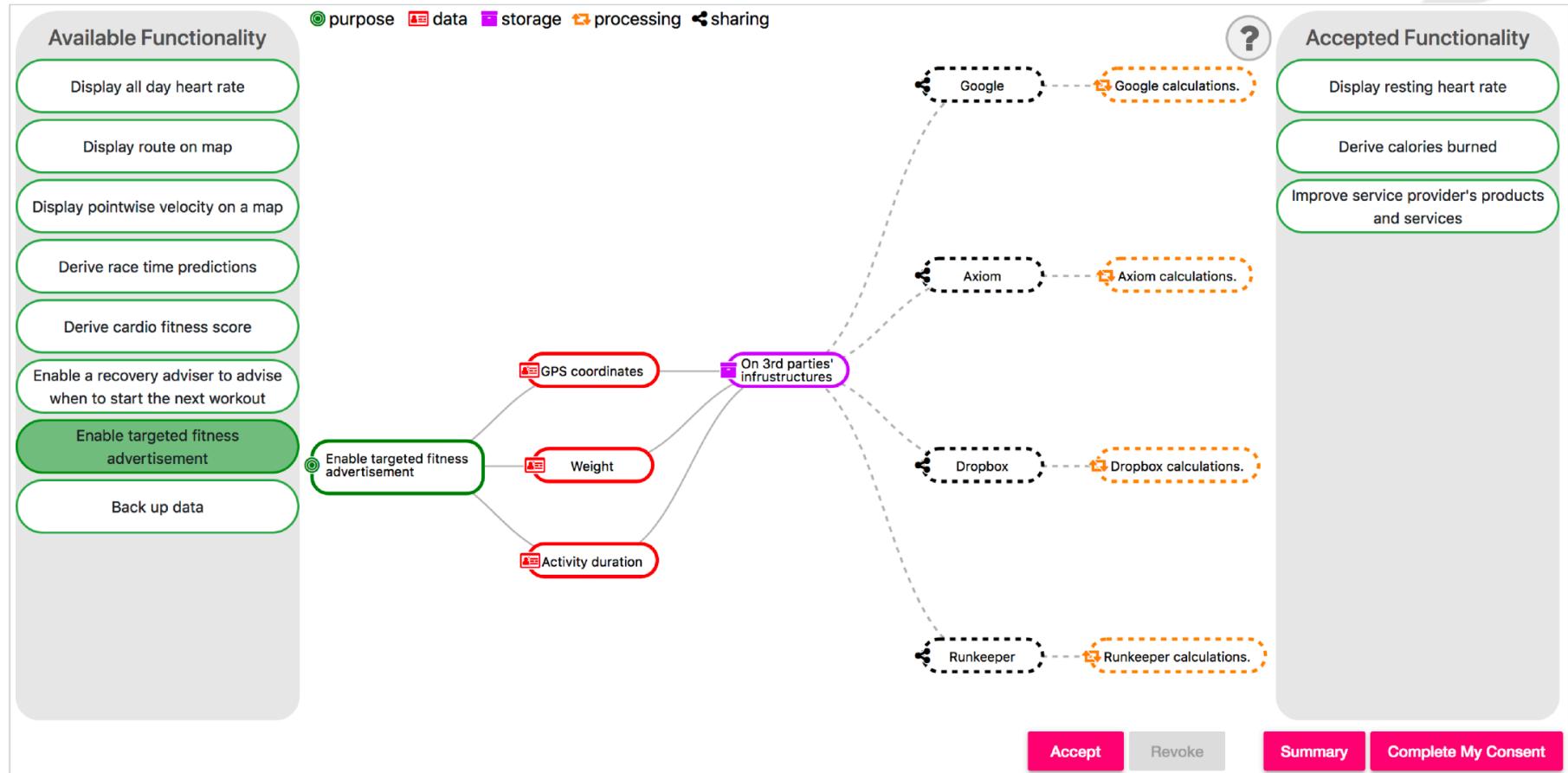
We need to process your data to provide the following services:

Display route on map	<input checked="" type="checkbox"/>
Display pointwise velocity on a map	<input type="checkbox"/>
Derive race time predictions	<input type="checkbox"/>
Derive calories burned	<input type="checkbox"/>
Derive cardio fitness score	<input checked="" type="checkbox"/>
Enable a recovery adviser to advise w...	<input type="checkbox"/>
Improve service provider's products ...	<input checked="" type="checkbox"/>
Enable targeted fitness advertisement	<input type="checkbox"/>
Back up data	<input type="checkbox"/>

Improve service provider's products and services

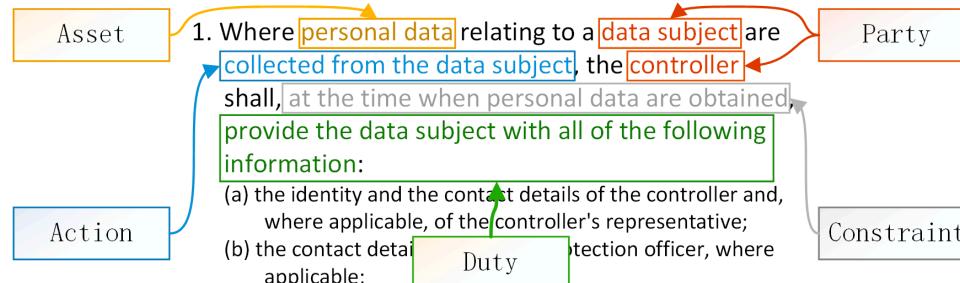
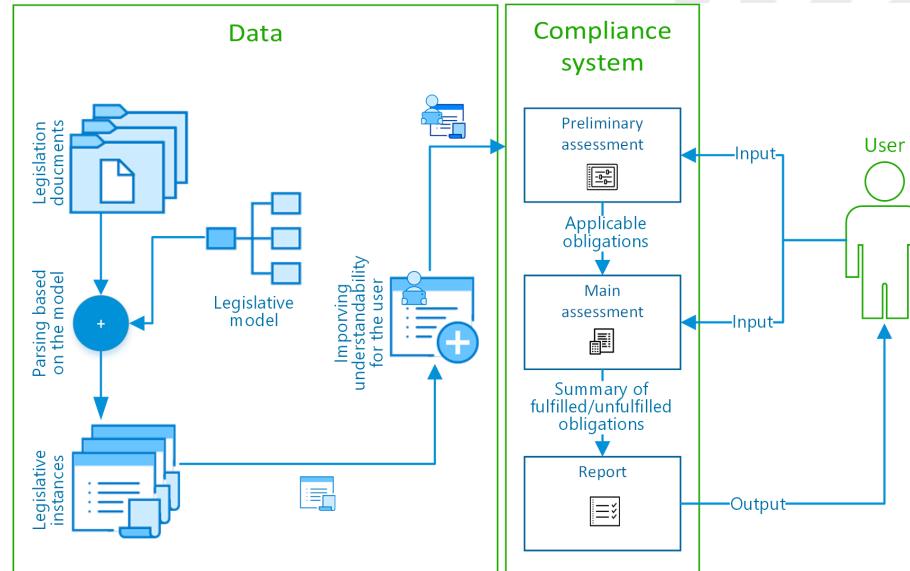
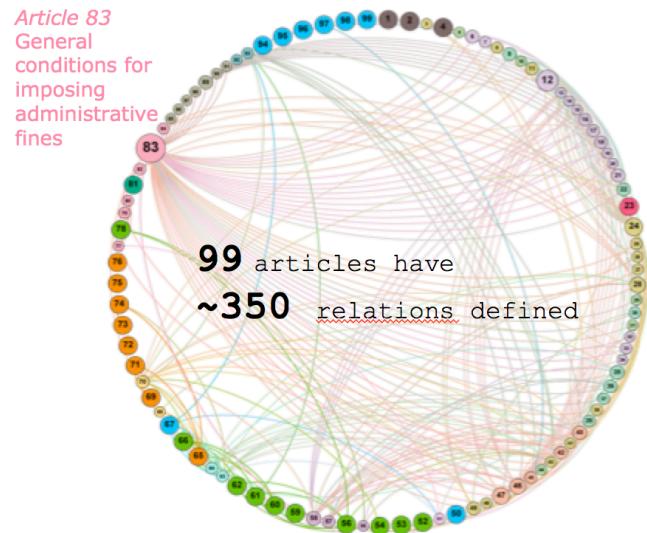
Complete Consent Request

Consent and Control Interfaces



Olha Drozd and Sabrina Kirrane
Conference paper currently under review

Regulatory Compliance Assessment



Regulatory Compliance Assessment

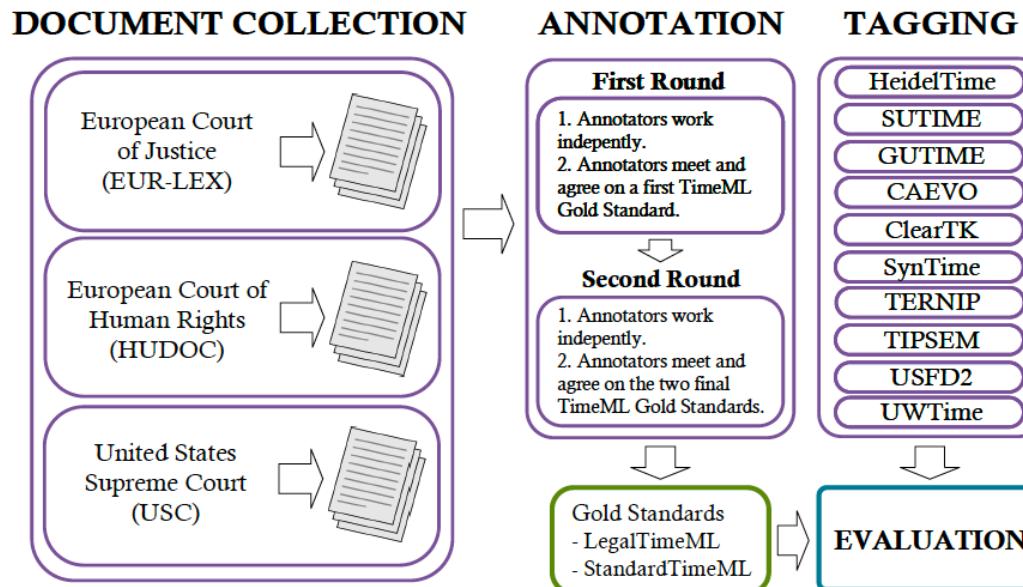
The screenshot shows a web browser window titled "Priwcy - GDPR Complia". The address bar displays the URL <http://priwcy.localhost/assessment.php?view=dashboard>. The page itself is titled "The GDPR Compliance Dashboard". On the left, there is a sidebar with a yellow header containing navigation links such as "Preliminary Check", "GDPR Compliance Dashboard", "Information and Access", "General obligations", "Impact Assessment", "Principles", "Data Protection Officer", "Automated decisions", "Security", "Outside the EU", and "Report Generation". The main content area features eight circular progress indicators, each labeled with a chapter name and a "Start" button below it. All indicators show 0% completion. The chapters are: Principles, Information and Access, Automated decisions, General obligations, Security, Impact Assessment, Data Protection Officer, and Outside the EU.

Legislative Compliance Assessment: Framework, Model and GDPR Instantiation
Sushant Agarwal, Simon Steyskal, Franjo Antunovic and Sabrina Kirrane
Proceedings of the Annual Privacy Forum (APF 2018)

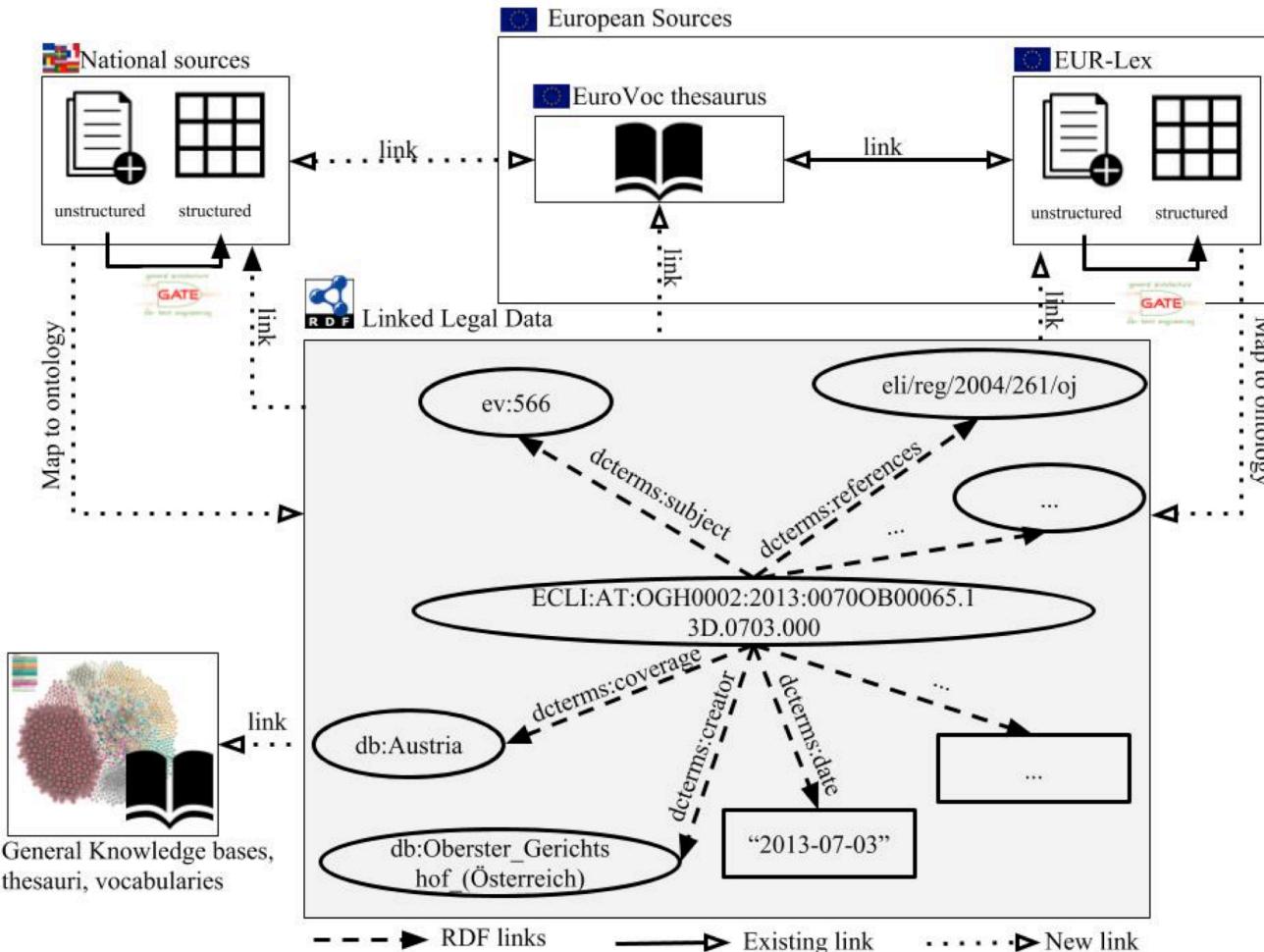
Towards a Legal Knowledge Graph

Temporal Tagger	Identification	Normalization	Events	Relations
HeidelTime	✓	✓	-	-
SUTime	✓	✓	-	-
GUTime	✓	✓	✓	✓
CAEVO	✓	✓	✓	✓
ClearTK-TimeML	✓	-	✓	✓
SynTime	✓	-	-	-
TERNIP	✓	✓	-	-
TIPSem	✓	✓	✓	✓
USFD2	*	*	-	*
UWTime	✓	✓	-	-

Corpus	# Doc.	Doc. Size (Avg. KB)	Doc. Size (Avg. Tokens)	Sentence length (Avg. Tokens)
ECHR	10	4	725	13
ECJ	10	32	5304	32
USC	10	25	5072	37



Towards a Legal Knowledge Graph

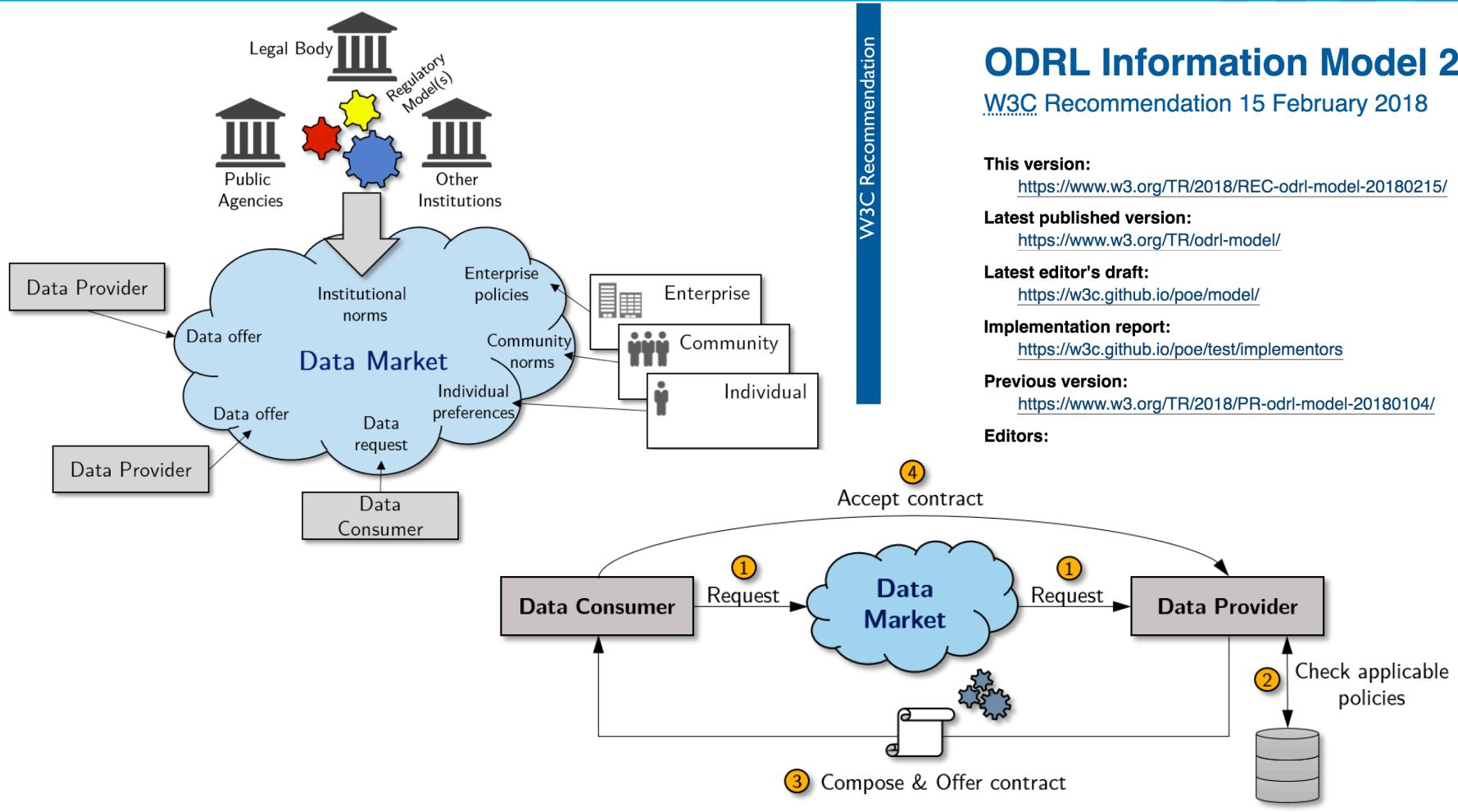


Interlinking Legal Data

Erwin Filtz, Sabrina Kirrane and Axel Polleres

Proceedings of the Posters and Demos Track of the 14th International Conference on Semantic Systems (SEMANtICS 2018)

Policy Driven Data Markets



ODRL Information Model 2.2

W3C Recommendation 15 February 2018

This version:

<https://www.w3.org/TR/2018/REC-odrl-model-20180215/>

Latest published version:

<https://www.w3.org/TR/odrl-model/>

Latest editor's draft:

<https://w3c.github.io/poe/model/>

Implementation report:

<https://w3c.github.io/poe/test/implementors>

Previous version:

<https://www.w3.org/TR/2018/PR-odrl-model-20180104/>

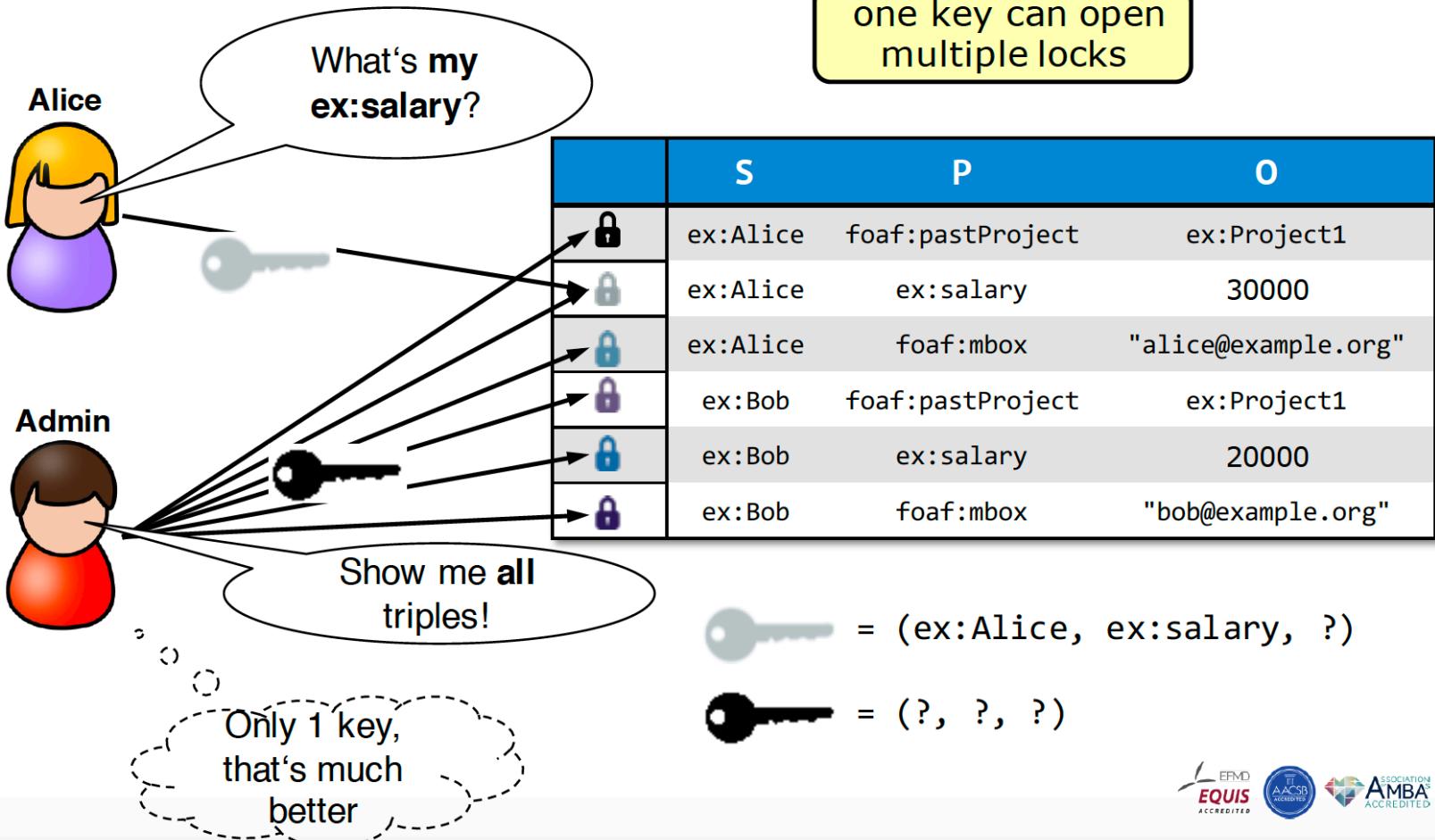
Editors:

If you can't enforce it, contract it: Enforceability in Policy-Driven (Linked) Data Markets

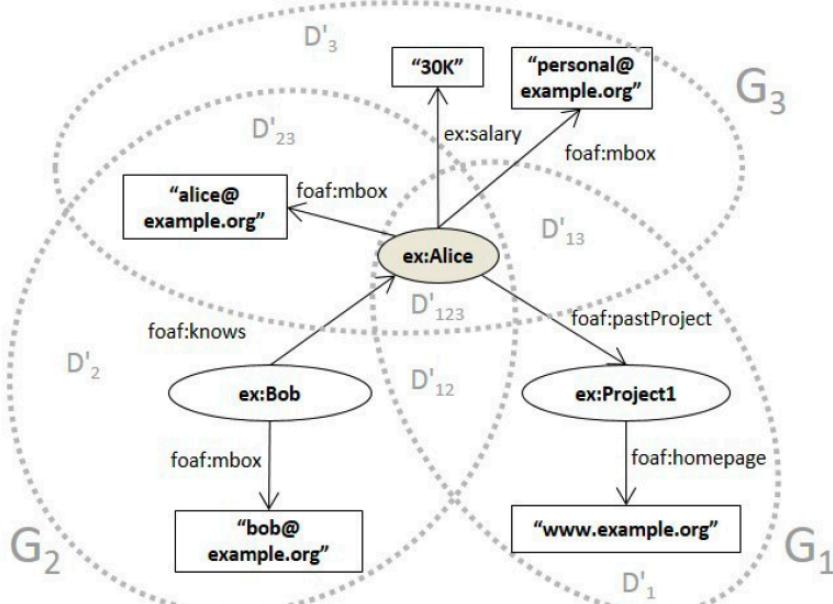
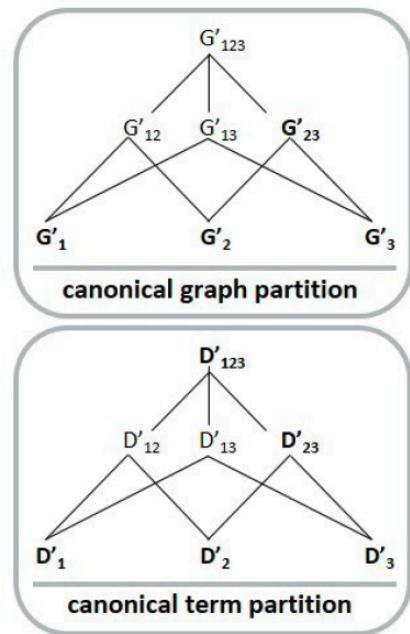
Simon Steyskal and Sabrina Kirrane

Proceedings of the Posters and Demos Track of the 11th International Conference on Semantic Systems (SEMANTiCS 2015)

RDF Encryption based on Patterns



Combining RDF Compression and Encryption



ex:Alice foaf:pastProject ex:Project1 .	G_1
ex:project1 foaf:homepage "www.example.org" .	
ex:Alice foaf:mbox "alice@example.org" .	G_2
ex:Bob foaf:knows ex:Alice .	
ex:Bob foaf:mbox "bob@example.org" .	
ex:Alice foaf:mbox "personal@example.org" .	G_3
ex:Alice ex:salary "30K" .	
ex:Alice foaf:mbox "alice@example.org" .	
ex:Project1 foaf:pastProject ex:Alice .	G_1'
ex:Project1 foaf:homepage "www.example.org" .	
ex:Bob foaf:knows ex:Alice .	G_2'
ex:Bob foaf:mbox "bob@example.org" .	
ex:Alice ex:salary "30K" .	G_3'
ex:Alice foaf:mbox "personal@example.org" .	
ex:Alice foaf:mbox "alice@example.org" .	G_{23}'

Going Forward....

- Combine policies and legal knowledge graphs
- Federated Semantic Data Management with policies
- An algebra for combining Description Logic policies
- A reference architecture for enhancing the Linked Data platform with policies and transparency
- A unified framework for representing and reasoning over policies (Privacy policies, regulatory constraints, business rules, social norms)

Thank you / contact details



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