GDPRtEXT

GDPR as a Linked Data Resource

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GDPR???

- General Data Protection Regulation (GDPR)
- New data protection law for EU
- Implemented from 25th May 2018
- Affects legal basis for how our personal data is being used by organisations

- Consent
- Information given to user
- What data is collected?
- How is it used?
- Who is it shared with?
- How long is it stored for?

https://www.flickr.com/photos/cardkarma/

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THIS SERVICE MAY UTILIZE 3RD PARTY EXTENSIONS IN ORDER TO PLAY THE SONG *CAN U FEEL IT* FROM THEIR DEBUT ALBUM *ALIVE*.

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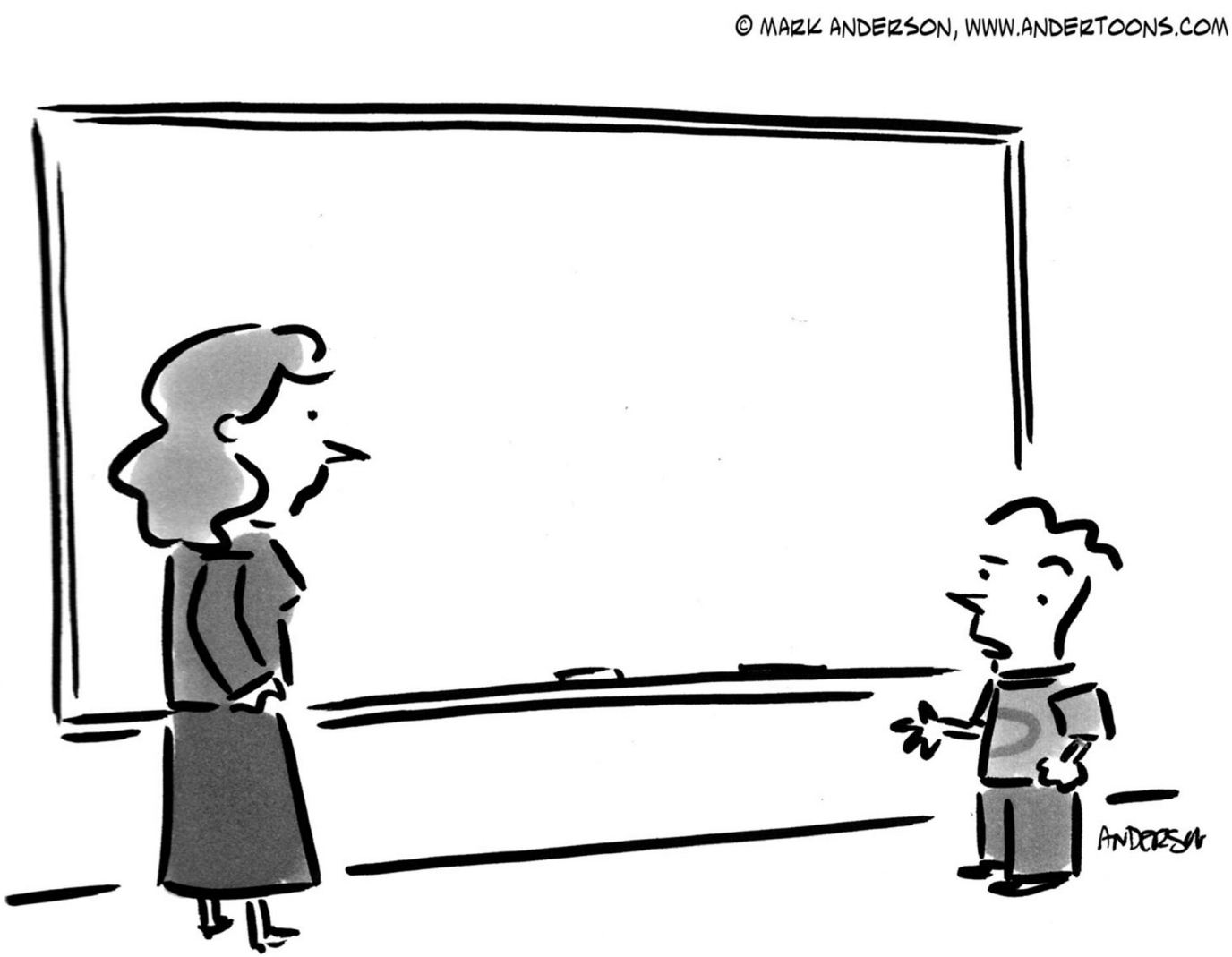
IF YOU KNOW ANYONE IN EUROPE, PLEASE TELL THEM WE'RE COOL.

https://xkcd.com/1998/



"Before I write my name on the board, I'll need to know how you're planning to use that data."

Motivation

Developed GDPRov [1],
an ontology for modelling provenance related to GDPR compliance

How to relate with GDPR obligations and concepts?

[1] Pandit, H.J., Lewis, D.: **Modelling Provenance for GDPR Compliance using Linked Open Data Vocabularies**. In: Proceedings of the 5th Workshop on Society, Privacy and the Semantic Web - Policy and Technology (PrivOn2017) (PrivOn) (2017).

GDPR document

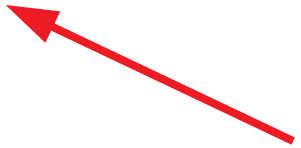
- References to are textual
- Articles: Article 4(11), A4-11
- Concepts: Compliance, Personal Data
- No consistent format in legal domain
- Arbitrary citations

Great for humans, but not for machines

Existing Work

- Legalislations – Linked Data – Semantic Web
- European Publications Office provides only document level metadata

- How to refer to specific articles, terms, or concepts within GDPR?



research problem right here!

GDPRtEXT
(GDPR text extensions)

1. Expose the GDPR document as Linked Data

2. Define an ontology of its terms and concepts

Approach

1) Understand document structure
2) Represent as linked data
3) Identify terms and concepts
4) Define Ontology

Structure of GDPR

- Recitals (173)
- Chapters (10 – numbered I to X)
  - Sections (numbered in every chapter)
    - Articles (total 99, continuos numbering)
      - Points (numbered in every article)
        - Subpoints (numbered in every point)
- Citations (21)

GDPRtEXT Ontology

Extend ELI Ontology

- `eli:LegalResource` (LR) is a legal resource
- `eli:LegalResourceSubdivision` (LRS) is its (sub-)part
- We extend LRS to define:
  - `Chapter`
  - `Section`
  - `Article`
  - `Point`
  - `SubPoint`
  - `Recital`
  - `Citation`

ELI Ontology

European Legislation Identifier

- Published by European Publications Office
- Defines metadata for legal documents
- GDPRtEXT uses latest version (v1.1)

https://publications.europa.eu/en/mdr/eli/index.html

GDPR Catalog

define using DCAT / VOID

Dataset	Distribution	Comment
canonical	HTML, PDF, XML	Official GDPR distributions
textid, dataset	HTML, JSON, text	GDPR text with IDs
annotated	XML, Turtle, JSON-LD	RDF

GDPR → RDF / SPARQL

article12-3 at GDPRtEXT

https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/article12-3

Property	Value
eli:description	▪ The controller shall provide information on action taken on a request under Articles 15 to 22 to the data subject without undue delay and in any event within one month of receipt of the request. That period may be extended by two further months where necessary, taking into account the complexity and number of the requests. The controller shall inform the data subject of any such extension within one month of receipt of the request, together with the reasons for the delay. Where the data subject makes the request by electronic form means, the information shall be provided by electronic means where possible, unless otherwise requested by the data subject. (xsd:string)
is gdprtext:hasPoint of	▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/article12>
gdprtext:isPartOfArticle	▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/article12>
gdprtext:isPartOfChapter	▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/chapterIII>
gdprtext:isPartOfSection	▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/chapterIII-1>
eli:is_part_of	▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/GDPR> ▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/article12> ▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/chapterIII> ▪ <https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/chapterIII-1>
eli:number	▪ 3 (xsd:string)
eli:title_alternative	▪ Article12(3) (xsd:string)
rdf:type	▪ eli:LegalResourceSubdivision ▪ gdprtext:Point

Metadata

Anon_0

rdf:type	prv:DataItem
rdf:type	<http://www.w3.org/2004/03/trix/rdfg-1/Graph>
foaf:primaryTopic	<https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/article12-3>
foaf:topic	Anon_0
ir:realizes	<https://openscience.adaptcentre.ie/resources/GDPRtEXT/gdpr/data/article12-3>
prv:createdBy	Anon_1 (more)

expand all

This page shows information obtained from the SPARQL endpoint at https://openscience.adaptcentre.ie/sparql.
As N3 | As RDF/XML | Browse in Disco | Browse in Tabulator | Browse in OpenLink Browser

GDPRtEXT Ontology

Defining GDPR terms and concepts

- Define term
  - skos:Concept
  - without broad/narrow
- Link to definition in GDPR text
  - rdfs:isDefinedBy
  - rdfs:seeAlso
- Additional relations
  - gdprtext:involves

- OWL2 vocabulary
  200+ concepts/terms
- purl.org for persistent url
- CC-by-4.0 license
- Zenodo
  10.5281/zenodo.1146350
- Datahub
  http://datahub.ckan.io/dataset/gdprtext
- data.gov.ie
  https://data.gov.ie/dataset/gdprtext

Documentation

Widoco
https://doi.org/10.5281/zenodo.591294

LODE
http://www.essepuntato.it/lode

WebVOWL
http://vowl.visualdataweb.org/

Available online
https://openscience.adaptcentre.ie/ontologies/GDPRtEXT/deliverables/docs/index-en.html

Ontology Specification Draft

language en

GDPRtEXT

Release 2017-10-01

This version:
https://openscience.adaptcentre.ie/ontologies/GDPRtEXT/v/gdpr_v0.5.owl
Latest version:
http://purl.org/adaptcentre/openscience/ontologies/GDPRtEXT
Previous version:
https://openscience.adaptcentre.ie/ontologies/v/GDPRtEXT/gdpr_v0.1.owl
Revision:
0.5
Authors:
Harshvardhan J. Pandit
http://purl.org/adaptcentre/people/HJP
Publisher:
http://purl.org/adaptcentre/people/ADAPT, (null)
Download serialization:
Format RDF/XML Format N Triples Format TTL
License:
License CCby4.0
Visualization:
Visualize with WebVowl
Compatible with:
https://openscience.adaptcentre.ie/ontologies/v/GDPRtEXT/gdpr_v0.1.owl
Provenance of this page

Abstract

The General Data Protection Regulation (GDPR) is comprised of several articles, each with points that refer to specific concepts. The general convention of referring to these points and concepts is to quote the specific article or point using a human-readable reference. This ontology provides a way to refer to the points within the GDPR using the European Legislation Identifier ontology published by the European Publication Office. It also defines the concepts relevant or defined by the GDPR using the Simple Knowledge Organization System (SKOS) ontology.

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  - 5.1. Classes
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1. Introduction

back to ToC

The **GDPRtEXT** ontology aims to provide a way to refer and use concepts defined by the General Data Protection Regulation (GDPR). It does so by exposing the text of the GDPR as a linked data resource using the European Legislation Identified (ELI) ontology. SKOS is then used to define concepts defined / specified / used by the GDPR.

DPD → GDPR

- Data Protection Directive (DPD)
- Reuse existing work from DPD to GDPR?
- XACML rules for compliance [1]
- Map DPD obligations to GDPR
- Quantify what has changed

[1] Fatema, K., Debruyne, C., Lewis, D., OSullivan, D., Morrison, J.P., Mazed, A.A.: A semi-automated methodology for extracting access control rules from the european data protection directive. In: Security and Privacy Workshops (SPW), 2016 IEEE. pp. 25–32. IEEE (2016)

Benefits - Compliance

- Documentation
- Reports

- Privacy Policy
- Licenses
- Link Legal Datasets
- Relate Laws

Personal data

	Question	Yes	No
Consent based data processing (Articles 7, 8 and 9 and further guidance available on GDPRandYou.ie)	Have you reviewed your organisation's mechanisms for collecting consent to ensure that it is freely given, specific, informed and that it is a clear indication that an individual has chosen to agree to the processing of their data by way of statement or a clear affirmative action?		

GDPR Readiness Checklist provided by Data Protection Commissioner, Ireland

Populate checklist with SPARQL queries

Turn text based approaches to semantic approaches!

2. Personal Data

Validity of Consent

Have you reviewed your organisation's mechanisms for collecting consent to ensure that it is freely given, specific, informed and that it is a clear indication that an individual has chosen to agree to the processing of their data by way of statement or a clear affirmative action?

P1. consent collection

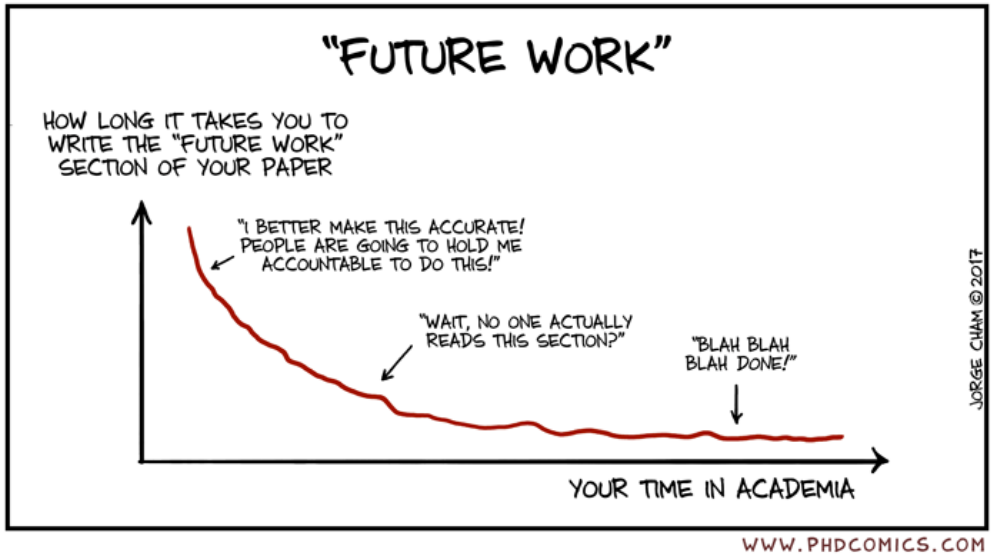
```
SELECT DISTINCT ?step ?terms ?template ?givenConsent {
  ?step a gdprov:ConsentAcquisitionStep .
  ?template a gdprov:ConsentAgreementTemplate .
  ?terms a gdprov:TermsAndConditions .
  ?givenConsent a gdprov:ConsentAgreement .
  ?step gdprov:usesConsentAgreementTemplate ?template .
  ?step gdprov:usesTermsAndConditions ?terms .
  ?step gdprov:generatesConsentAgreement ?givenConsent .
} ORDER BY ?step
```

RAW RESPONSE | TABLE | PIVOT TABLE | GOOGLE CHART | Search: | Show 50 entries

	step	terms	template	givenConsent
1	this:GetNewUserConsent	this:TermsAndConditions	this:NewUserSignUpForm	this:NewUserConsent

Showing 1 to 1 of 1 entries

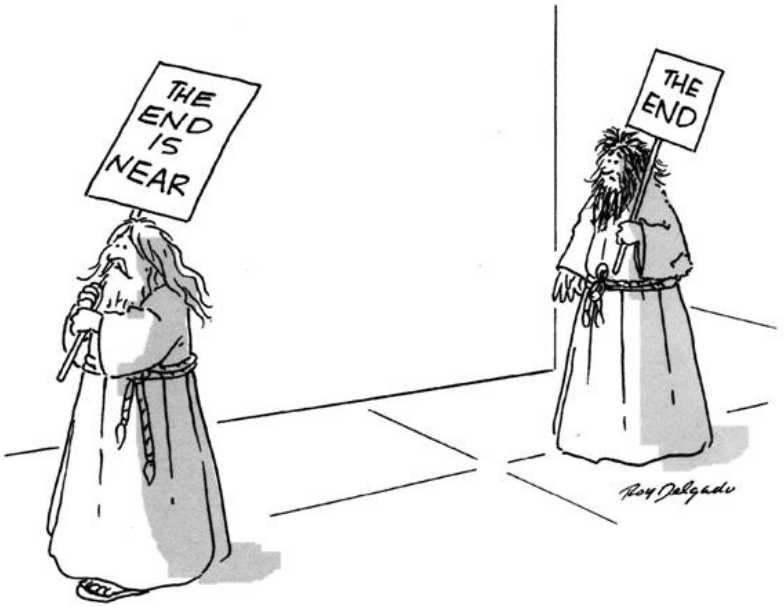
Harshvardhan J. Pandit, Declan O'Sullivan, Dave Lewis. "Queryable Provenance Metadata For GDPR Compliance". SEMANTiCS 2018. in-press



Future Work

- Adapt recent change/correction to GDPR
- Extend approach to other legal documents
- Participate in W3C Data Privacy and Controls Vocabulary Group (DPCV)
- Possible collaboration with lexparency.org

GDPRtEXT

GDPR as a Linked Data Resource

Harshvardhan J. Pandit, Kaniz Fatema, Declan O'Sullivan, Dave Lewis