Creating A Vocabulary for Data Privacy
The First-Year Report of Data Privacy Vocabularies and Controls Community Group (DPVCG)

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DPV vocabulary: https://w3.org/dpv

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- Laws such as GDPR (EU, 2016) & CCPA (CA, 2018) regulate processing of personal data
- Obligations and compliance requirements provide motivation for adopting technical solutions
- Momentum towards interoperable privacy solutions (e.g. ISO 27701)

However, there are still some gaps to address:
1) Lack of standardised vocabularies for representing
- personal data categories (what?)
- purposes of processing (why? & how?)
2) No aligned terminology within privacy laws

Problem: How to represent information about handling (or processing) of personal data in a machine-readable format for compliance with data privacy laws such as GDPR and CCPA?

➔ To address the issue, a W3C community group (CG) was started "**Data Privacy Vocabularies & Controls CG**"

➔ Aim: To create vocabularies for representing personal data, purposes/processing, disclosure/consent, etc. in an interoperable format towards standardisation

➔ Started: 25th May 2018
➔ Members: 58 participants to date

➔ Deliverable of work done till date:
Data Privacy Vocabulary
http://w3.org/ns/dpv
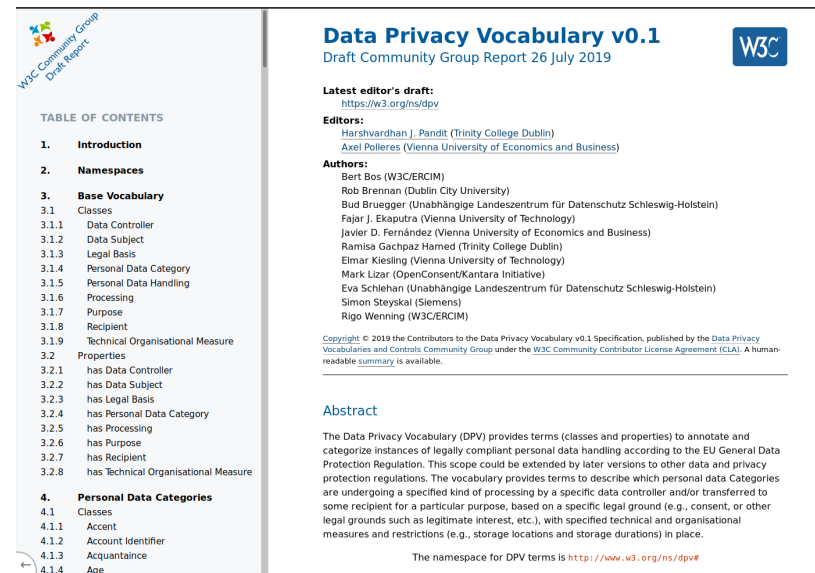

https://www.w3.org/community/dpvcg/

Public Mailing List
https://lists.w3.org/Archives/Public/public-dpvcg/

- Modular vocabulary for representing *personal data handling*
- Represented as an ontology using OWL2
- Published: 26th July 2019

- Models:
  1) Personal Data Categories
  2) Purposes
  3) Processing Categories
  4) Technical & Organisational Measures
  5) Legal Basis
  6) Consent
  7) Recipients, Data Controllers,
     Data Subjects

Link: http://w3.org/ns/dpv

GDPR Legal Basis Vocabulary
https://www.w3.org/ns/dpv-gdpr

- (informally based) NeOn methodology for ontology development [28]
- Decision to create top-level hierarchy of concepts
- Analysis of existing and relevant work for reuse
- Use of OWL for expressing relations and logic
- Base Vocabulary adopted from SPECIAL Usage Policy [6]
- Terms were proposed/resolved using spreadsheet in Google Sheets
- Documentation generated using W3C ReSpec
- Repo on Github
- Discussions via F2F and public mailing list

Column Name	Description	Representation
Class/Property	If term is Class or Property	*rdfs:Class/rdfs:Property*
term	The IRI of the term	as IRI
description	Description or definition	*dct:description*
domain	Domain if it is a property	*rdfs:domain*
range	Range if it is a property	*rdfs:range*
super classes/properties	Parent classes or properties	*rdfs:isSubClassOf*
sub classes/properties	Child classes or properties	N/A
related terms	Terms relevant to this	*rdfs:seeAlso*
how related?	Nature of relation	use as is
comments	Comments used for discussion	N/A
source	The source of the term	*rdfs:isDefinedBy*
date	Date of creation	*dct:created*
status	Status e.g. accepted,proposed	*sw:term_status*
comments	Comments to be recorded	*rdfs:comment*
contributor	dc:creator	*dct:creator*
date-accepted	Date of acceptance	*dct:date-accepted*
resolution	Record e.g. minutes of meeting	as IRI

[6] Bonatti, P.A., Kirrane, S., Petrova, I.M., Sauro, L., Schlehahn, E.: The SPECIAL Usage Policy Language, V0.1. Tech. rep. (2018), https://www.specialprivacy.eu/vocabs
[28] Suárez-Figueroa, M.C., Gómez-Pérez, A., Fernández-López, M.: The NeOn Methodology for Ontology Engineering. In: Suárez-Figueroa, M.C., Gómez- Pérez, A., Motta, E., Gangemi, A. (eds.) Ontology Engineering in a Net- worked World, pp. 9–34. Springer Berlin Heidelberg, Berlin, Heidelberg (2012). https://doi.org/10.1007/978-3-642-24794-1_2, http://link.springer. Com/10.1007/978-3-642-24794-1_2

1) Document using Wiki https://www.w3.org/community/dpvcg/wiki/Main_Page
2) Identify relevant concepts and relationships in vocabularies

Standards
- PROV-O
- P-Plan
- ODRL
- vCard
- ActivityStreams
- COEL
- CoreVocabularies (ISA2)
- IEEE P7012
- Consent Receipt v1.1
- P3P

Vocabularies
- SPECIAL project
- MIREL project
- DAPRECO project
- GDPRtEXT
- GDPRov
- GConsent
- Privacy Preference Ontology (PPO)
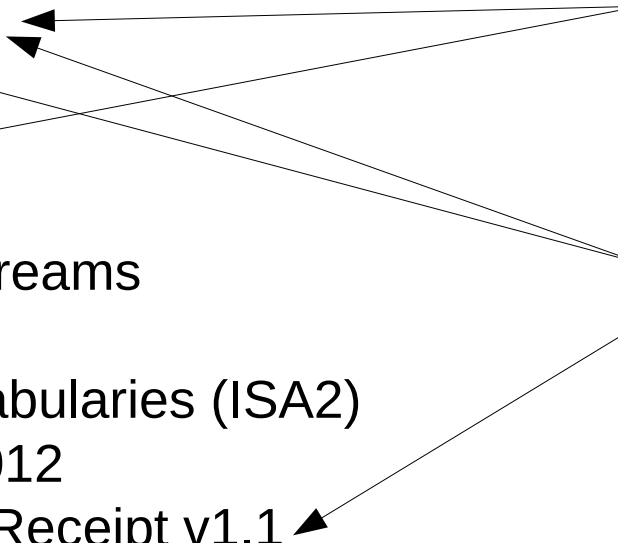
Reasons for not reusing concepts:
- ✗ Importing all external semantics into DPV
- ✗ Choice of OWL2 was made at a later stage of development
- ✗ Not all concepts matched or fit in together

- Top-level classes defining a policy for legal personal data handling
- Represented by class **PersonalDataHandling**
- Connects different modular components
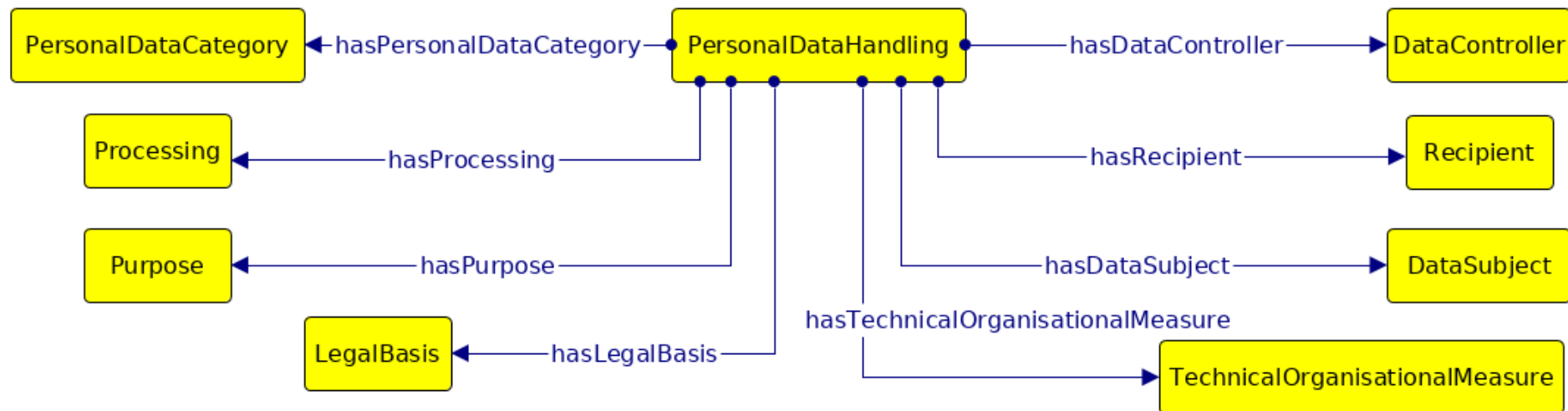
```
:SomePurpose a dpv:Purpose ;
        rdfs:label "Some Purpose" ;
        dpv:hasSector dpv-nace:M72 .
```
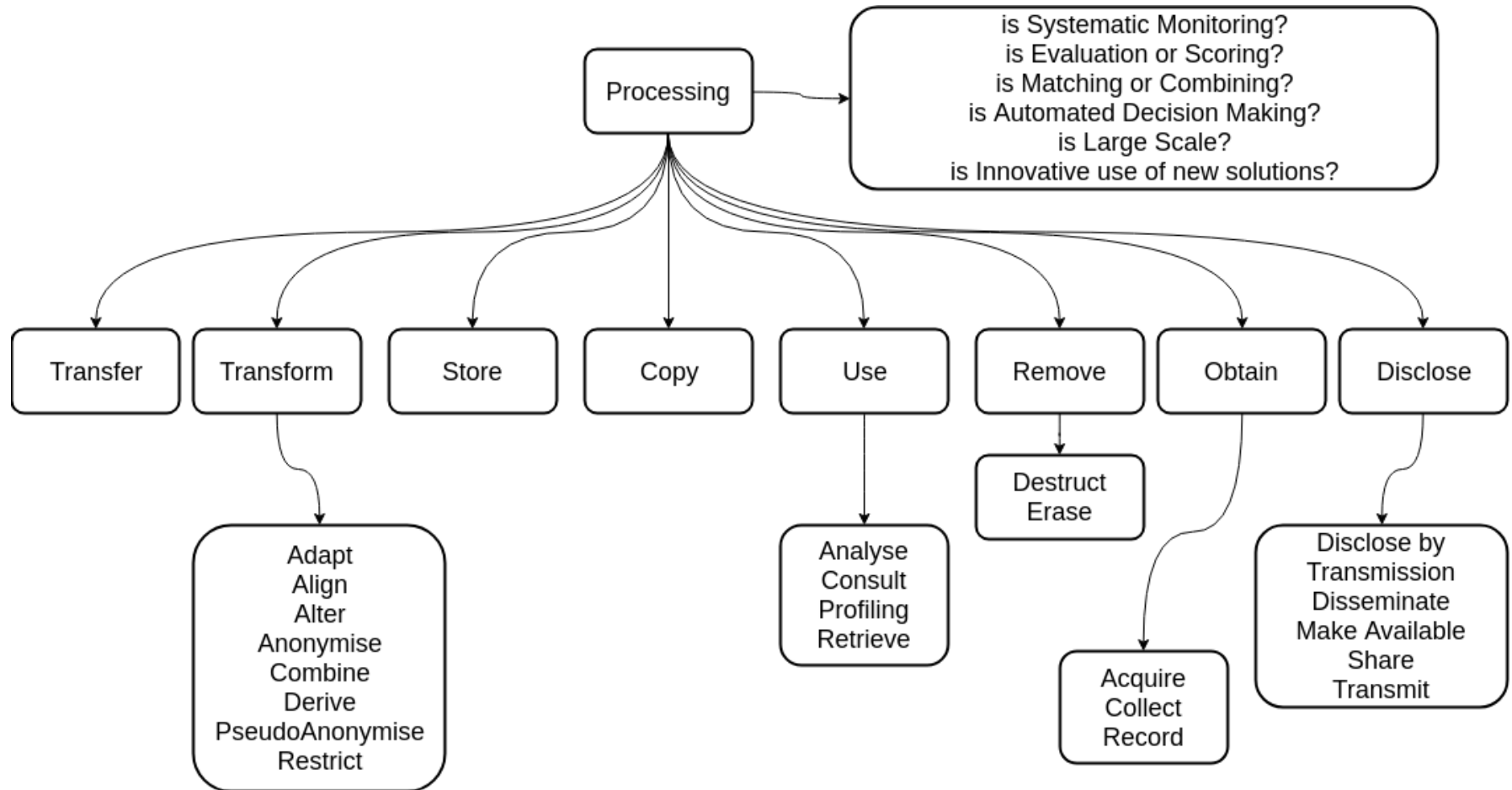
Top-level categorisation of purposes
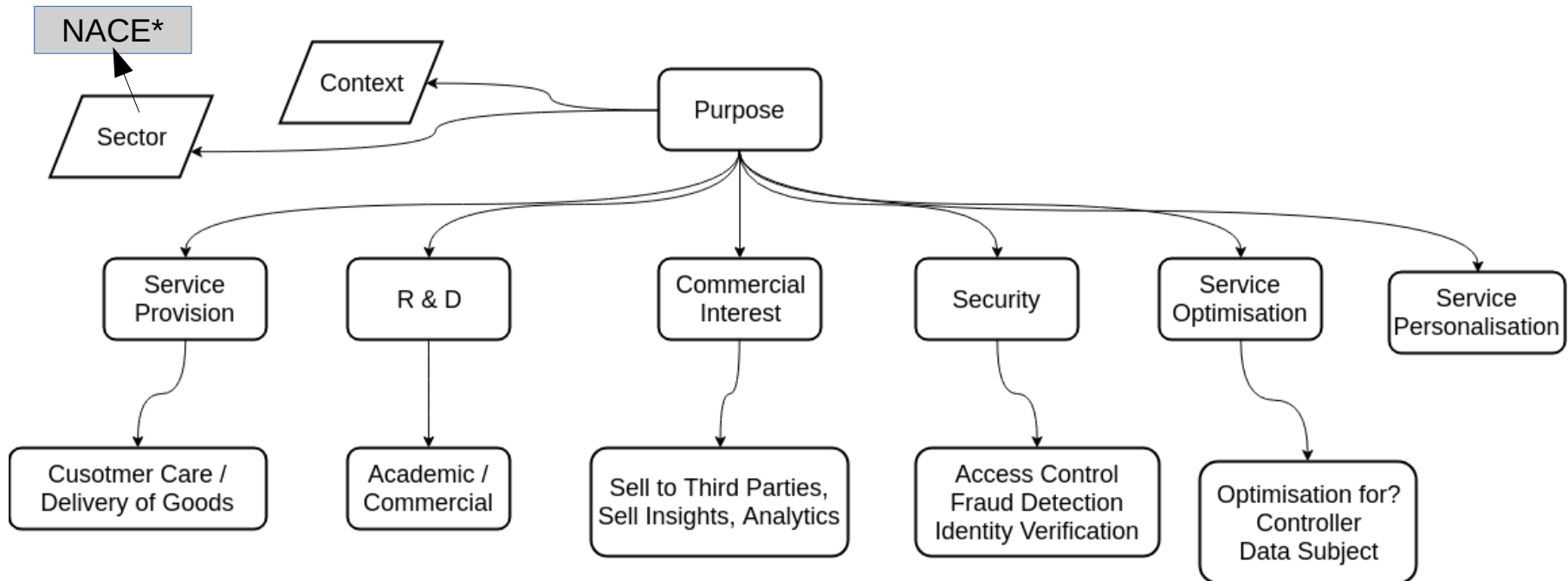
NACE*

```
:NewPurpose
        rdfs:subClassOf dpv:DeliveryOfGoods, dpv:FraudPreventionAndDetection ;
        rdfs:label "New Purpose" ;
        rdfs:comment "Intended delivery of goods with fraud prevention" .
```
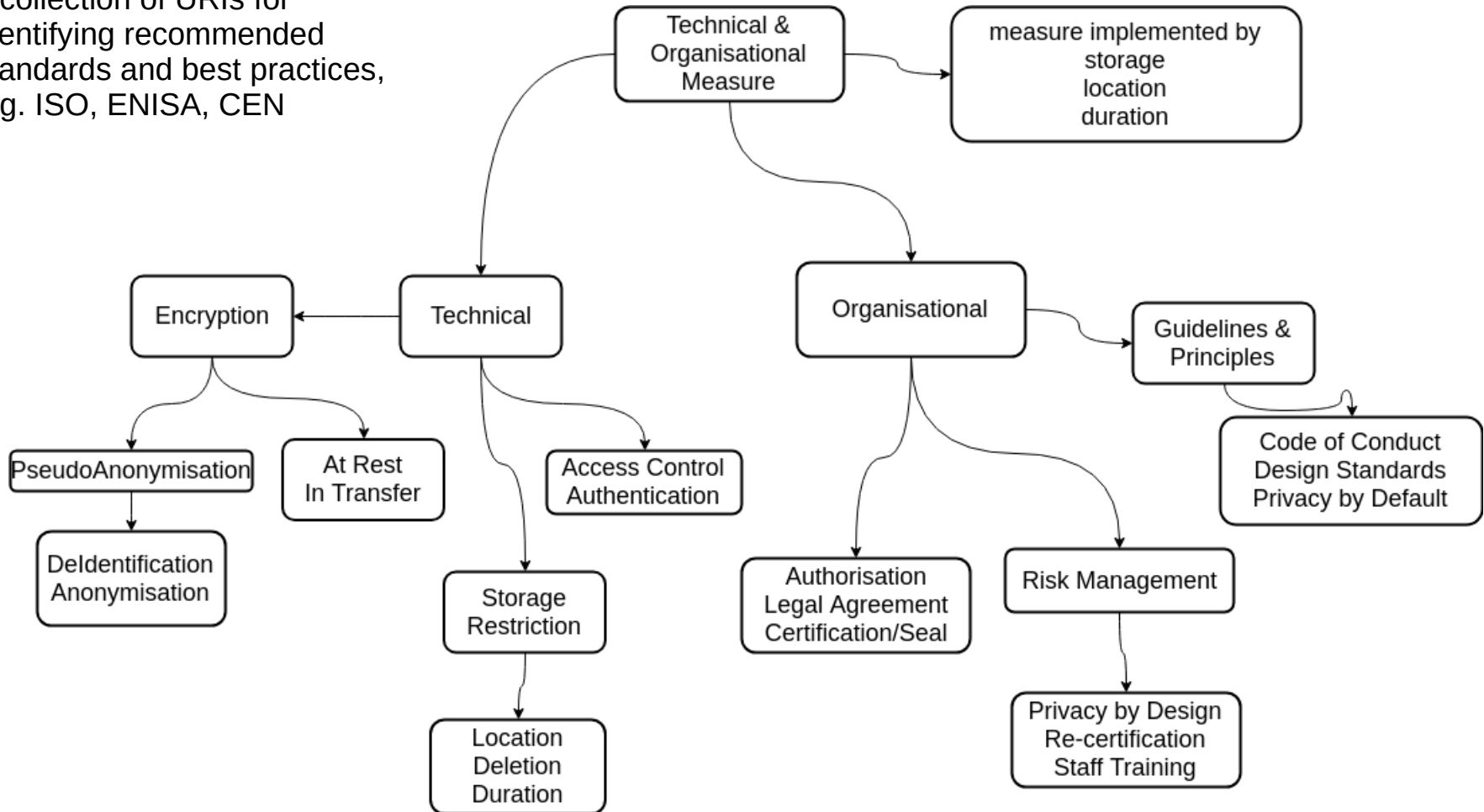
* RDFS representation of NACE https://github.com/dpvcg/dpv-nace
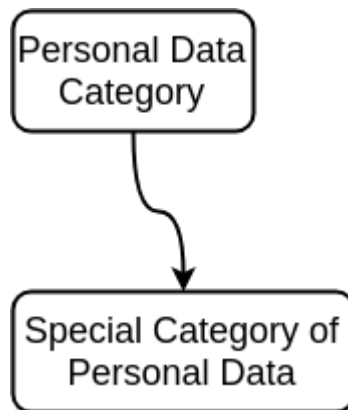
Hierarchy of Processing Categories

10

In the future, we plan to provide
a collection of URIs for
identifying recommended
standards and best practices,
e.g. ISO, ENISA, CEN

- Utilise taxonomy provided by Enterprivacy
- Extend for identified use-cases
- Add required classes e.g. Special Categories or Sensitive Categories


```
:PresentationsLiked
    rdfs:subClassOf dpv:Like ;
    rdfs:label "Presentations Liked" .


Like → Interest → Preference → Internal
```
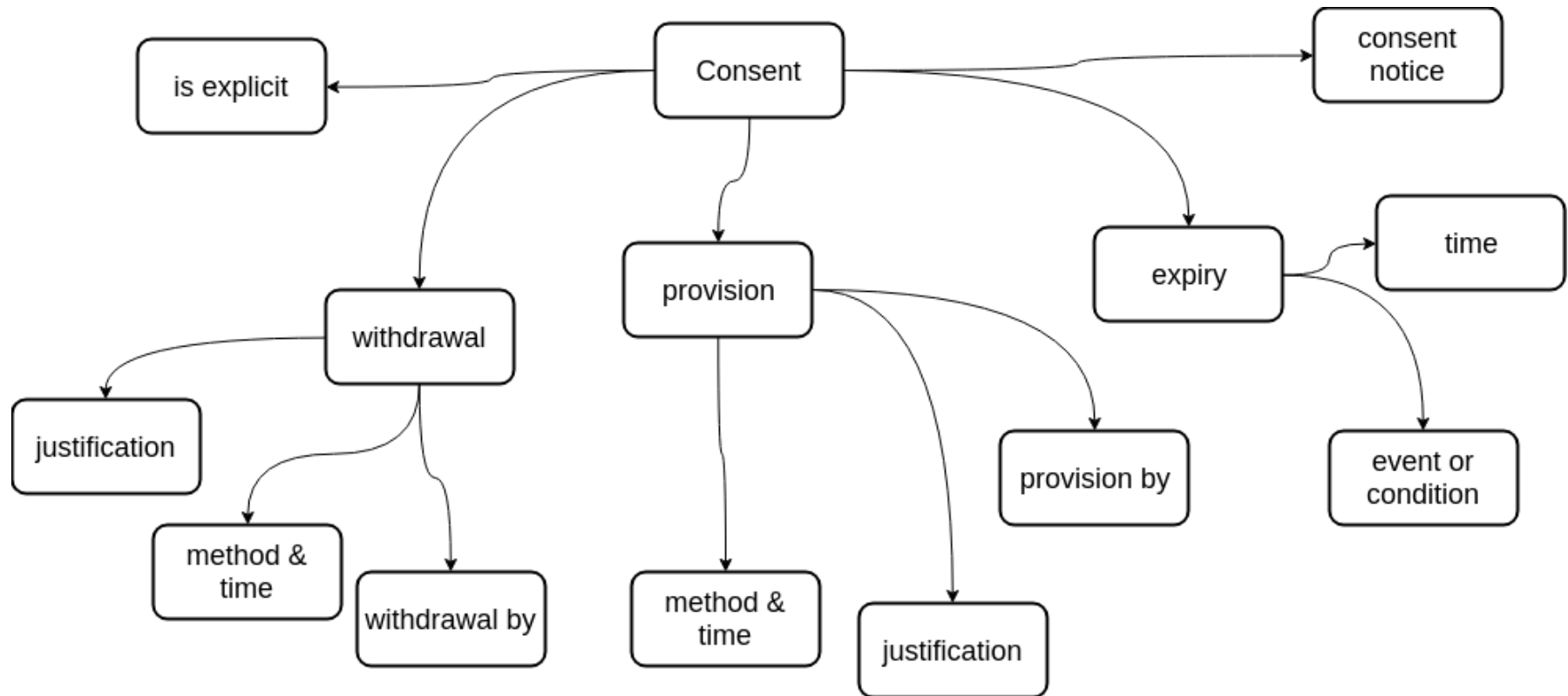

CATEGORIES OF PERSONAL INFORMATION

Provided by **Enterprivacy** Consulting Group   https://enterprivacy.com

Attributes required to demonstrate given consent satisfies all legal requirements – based on Consent Receipt v1.1 standard

- 'Primer Document': non-technical introduction to DPV
- Use-Cases and Examples documentation for adoption
- Open & ongoing feedback/suggestion
  - Github Issues / Pull-Requests
  - Public Mailing Lists
- Agreement towards v1 'stable' vocabulary
- Provide JSON-LD fragments for adoption on Web
- Resolve open issues
  https://www.w3.org/community/dpvcg/track/issues/open

  Invitation to join and participate!

~ **end of presentation** ~

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