Core Public Organisation Vocabulary – Draft 3

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1. INTRODUCTION

1.1. Context and problem statement

The notion of a 'public organisation' as a body that is responsible for a range of government functions is deceptively simple. The reality is that almost every characteristic of public organisations is subject to change: changes in function as duties are assigned or reassigned elsewhere, changes in internal structure, changes in working methods and, although some organisation's names may be ancient, others change with remarkable frequency. Such change may be the result of new legislation or policies coming into force, and tend to be particularly common immediately after elections for obvious reasons. It is therefore difficult to keep track of accurate information and yet that is precisely what's needed when considering things like purchase orders, tenders, contracts and invoices.

The need is for a common method of describing an organisation and its functions that is able to capture change and yet is interoperable across domains and across borders. Datasets such as a budgets, spending data, lists of contacts for services maintained and legally defined responsibilities will make references to the relevant public organisation, but the value and usefulness of that data will be greatly diminished if it is out of date or otherwise inaccurate.

1.2. Proposed solution

The Core Public Organisation Vocabulary (CPOV) is designed to support the exchange of basic information about individual public organisations. By using the vocabulary, almost certainly augmented with sector- or country-specific information, institutions publishing data about public organisations will be able to

- Share information G2G (government to government), G2B (government to business) and G2C (government to citizen);
- develop common information systems;
- link data from public organisations to other data sets;
- manage a cross-border repository of public services and organisations;
- browse public organisations by its function;
- keep track of the evolution of public organisations; and
- increase efficiencies by spotting duplicated or overlapping functions.

The use cases of the CPOV are further elaborated in section 3.

1.3. Scope

The Core Public Organisation Vocabulary is designed to describe the organisation itself. Whilst the vocabulary may support links to descriptions of services it operates, members of staff or other resources such as relevant legislation, policies and jurisdictional coverage, it will not describe those resources in detail. The vocabulary is not concerned with features associated with commercial entities such as shareholdings and ownership.

Wherever possible, the CPOV will reuse existing vocabularies and, as a result, might not define any new terms of its own. When reusing existing terms, it will define how they should be used and may suggest specific code lists to be used as values for properties.

1.4. The CPOV Process and methodology

This common data model has been defined as a core vocabulary for public organisations. A Core Vocabulary is a simplified, reusable, and extensible data model that captures the fundamental characteristics of an entity in a context-neutral fashion. Well known examples of existing Core Vocabularies include the Dublin Core Metadata Set[1]. Such Core Vocabularies are the starting point for agreeing on new semantic interoperability assets and defining mappings between existing assets. Semantic interoperability assets that map to or extend such Core Vocabularies are the minimum required to guarantee a level of cross-domain and cross-border interoperability that can be attained by public administrations.

The work has been conducted according to the ISA process and methodology for developing Core Vocabularies [2]. The process and methodology provide guidance in two domains. First, the **process** describes how consensus can be reached among stakeholders and domain experts so that the vocabulary is recognised as meeting its design goals, leading to endorsement by Member States. Second, the **methodology** describes how the core vocabulary is specified following best practices for selecting, reusing, developing and presenting concepts. Table 1 provides an overview of the steps in the process and methodology.

Table 1: Process and Methodology Overview

Process *Reaching consensus*	Methodology *Developing a specification*
1. Identify stakeholders 2. Form working group 3. Identify chair & co-chair 4. Identify editors 5. Form review group 6. Secure IPR 7. Establish working environment and culture 8. Publish drafts 9. Review drafts 10. Publish last call working draft 11. Review last call working draft 12. Gather evidence of acceptance 13. Submit for endorsement 14. Endorse	1. Identify a meaningful set of Core Concepts 2. Research and review existing solutions 3. Research existing data and services 4. Use cases 5. Requirements 6. Terminology and conceptual data model 7. Naming conventions 8. Identifier conventions 9. The namespace document 10. Quality Assurance & Conformance Criteria

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[1] http://dublincore.org/documents/dcmi-terms/

1.5. Structure of this document

This document consists of the following sections.
- In section 2, a set of some key concepts which will serve as a common working terminology for this work are defined.
- Section 3 defines the main use cases that drives the specification of the Core Vocabulary.
- Information requirements for the Core Vocabulary are listed in section 4.
- The classes and properties defined for the vocabulary are identified in section 5.
- Section 6 contains the Conformance Statement for this Core Vocabulary.
- Accessibility and multilingual issues are addressed in section 7.

2. DEFINITION OF A COMMON WORKING TERMINOLOGY FOR KEY CONCEPTS

Public Organisation: any organisation that is defined as being part of the public sector by a legal framework at any level.

Issue
https://joinup.ec.europa.eu/asset/cpov/issue/definition-public-organisation

Legal framework: any law or regulation originating in society by the democratic principle.

[Add more as necessary]

3. USE CASES

The Core Public Organisation Vocabulary (CPOV) is designed to meet specific needs of businesses, public administrations and citizens across the European Union and beyond. These needs are described in the use cases below.

3.1. Facilitate sharing of basic data about public organisations

Information sharing across organisations is often hampered by the lack of semantic agreements. Common data standards, such as the Core Vocabularies, help public administrations to overcome the semantic barrier to information sharing. The Core Public Organisation Vocabulary is designed to make the exchange of basic information about public organisations easier. By using the vocabulary, administrations publishing data about their organisation will enable

- easier discovery of their organisation within and between countries;
- easier identification of how organisations interrelate;
- improved understanding of provided information because of common definitions; and
- easier comparison of similar organisations across sectors or countries.

> The CPOV will facilitate the sharing of basic data about public organisations G2G (Government-to-Government), G2B (Government-to-Business) and G2C (Government-to-Citizen).

3.2. Facilitate the development of common information systems

A common standard for describing public organisations, could support the development of common information systems in which public organisations are referred, such as

- A central **HR system** in which government employees are linked to different public organisations, posts, contact details and salaries;
- A **facilities management** system used across public organisations linking physical resources such as buildings and office equipment to public organisations and their staff; and
- An **e-Invoicing** system in which the data quality can be improved by modelling and uniquely identifying public organisations to whom invoices are addressed.
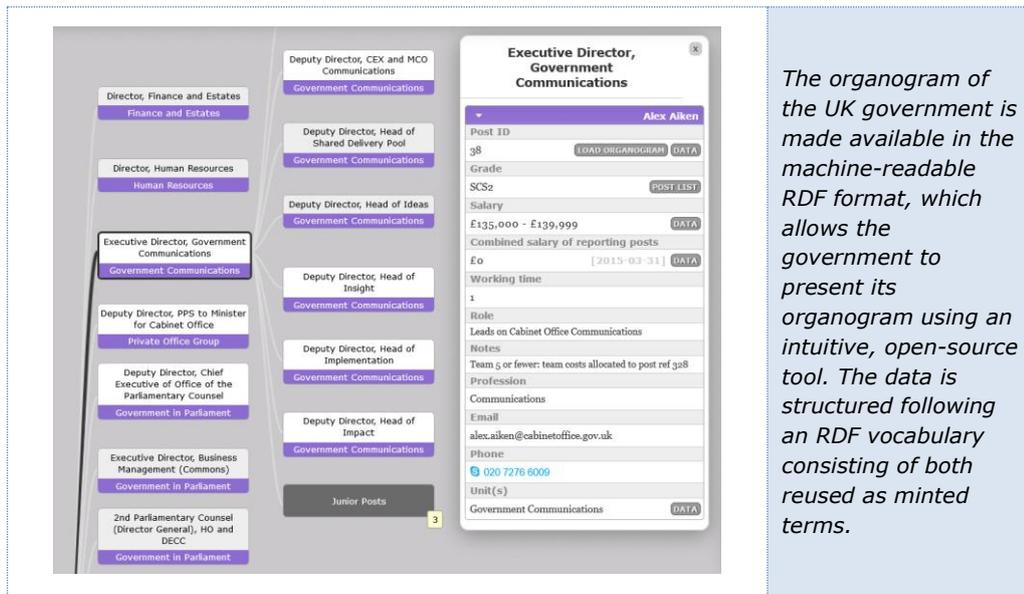
> The use of existing data models for the development of common information systems **facilitates the development** of those systems and improves their **interoperability**.

3.3. Linking open organograms

Many Public Organisations across the European Union publish their organograms online. Often, these organograms are published in non-machine-readable formats such as images or PDFs, limiting the reuse potential of organisational data. Publishing data in machine-readable formats enables public organisations and third parties to build tools that increase the usability and understandability of the data. Examples of publishing organograms as machine-readable data include the UK organogram of public staff[2] and the Italian Index of Public Administrations[3].

Figure 1: Organogram of the UK Government

The organogram of the UK government is made available in the machine-readable RDF format, which allows the government to present its organogram using an intuitive, open-source tool. The data is structured following an RDF vocabulary consisting of both reused as minted terms.

By publishing organograms in linked open data formats, such as RDF, it becomes possible to link data from different sources. For example, the *Salary* data in the British organogram can be linked to high value data sets such as the British annual budget. Moreover, if organograms are structured following a common data model, it would be possible to link organograms across organisations and countries.

The Core Public Organisation Vocabulary has the potential to **link organograms** to each other and to **high value data sets**.

3.4. Cross border information exchange: manage a cross-border repository of public services and organisations

A use case for the development of the Core Public *Service* Vocabulary (CP**S**V)[4], which was developed by the ISA Programme, is the management of
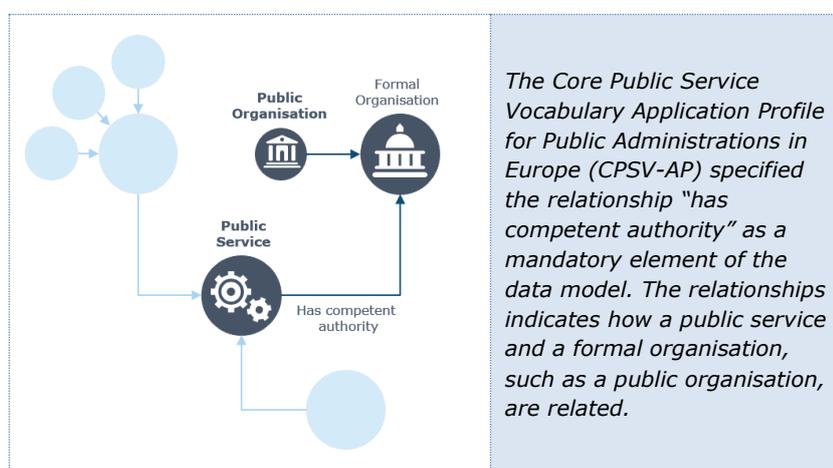
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[2] https://data.gov.uk/organogram/
[3] IPA: http://spcdata.digitpa.gov.it/dataIPA.html
[4] https://joinup.ec.europa.eu/asset/core_public_service/asset_release/core-public-service-vocabulary-0

a portfolio of public services. The CPSV was identified as one of the key elements for the development of such a repository.

> *"In most countries, the ownership and management of **public services** is split amongst different **public administrations** leading to different ways of managing their lifecycle. This makes it difficult to have a complete view of the public services offered within the context of a Member State, and to have a holistic approach for their management and the way the public services are grouped into business events."* [3]

The CP**S**V addresses the need for public administrations to describe their services and events in a common way. The CP**O**V has the potential to become a second key element of such a repository, providing the ability to link public services to public organisations, hence defining which organisation has the authority over specific public services.

Figure 2: Link between CPSV and CPOV

The Core Public Service Vocabulary Application Profile for Public Administrations in Europe (CPSV-AP) specified the relationship "has competent authority" as a mandatory element of the data model. The relationships indicates how a public service and a formal organisation, such as a public organisation, are related.

> Public service and organisation portfolio management allows public administration to apply a **holistic** and **systematic management** across authorities.

3.5. Find a public organisation by its function

When looking across borders and across sectors, often it is the *functions performed* by an organisation, rather than the organisation itself, that is the primary focus. For example, the function of improving ICT use across government may be the function of a specific ministry (such as MAREG in Greece), a government agency (such as Italy's AgID), part of the ministry of finance (such as in Finland) or the office of the Prime Minister (such as in the UK and Austria). Someone searching for contacts with people in other countries or regions who perform similar functions to their own will be able to use the CPOV to discover the organisations responsible for specific functions or areas of government. This complements, but does not replace, the notion of a public service directory.

The public organisation portfolio facilitates **discovery** of which public authorities and departments are **responsible** for given areas of the **public task**.

3.6. Increase efficiencies by spotting where responsibilities and functions are duplicated or overlap

The public sector is highly complex. It is all but impossible for anyone to maintain a clear picture in their mind of how different departments and agencies interrelate and where functions and responsibilities overlap. The CPOV, with its links between organisations, their departments and their responsibilities, offers the potential to visualise the different relations and thereby spot similarities, duplications of effort or gaps in the system. Comparisons can also be made across borders so that potential efficiencies can be more easily identified.

A **visualisation** of the **structure of the public sector**, particularly when compared with similar governments elsewhere in Europe, offers the potential for significant **efficiency gains**.

3.7. Keep track of the evolution of public organisations

The structure and responsibilities of public organisations are prone to change, e.g. following elections. A core vocabulary describing public organisations, allows to track these changes over time.

The CPOV allows stakeholders to track the **frequent changes** in structure and responsibilities of public organisations.

3.8. Requirements

The use cases set out above give rise to the following requirements:

R1 Basic facts about the organisation must be recorded such as its name, contact point(s), address(es) etc.

R2 The relationship between an organisation and its constituent departments or subsidiaries must be captured.

R3 The description must be tied to a time, either the current time, i.e. the description that applies today, or a historical period, ideally with a start and end date.

R4   Descriptions must persist and be readily referenced beyond the life of the current organisation.

R5   The vocabulary must support descriptions of the responsibilities conferred and the functions performed by an organisation.

R6   It must be possible to recognise different organisations by their function/responsibilities.

Use case 3.3 strongly suggests the requirement that it should be possible to generate organograms, that is, organisation charts, from data created using the CPOV. The Working Group resolved[5] that details of posts within a public organisation and the people holding those posts was out of scope for the current work. Nevertheless, the vocabulary should not prevent or hinder the addition of such information.

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4. EXISTING SOLUTIONS

The need for a systematised way to refer to and describe public organizations is not new. Several solutions already exist, some of which are listed in this section.

4.1. The W3C Organisation Ontology

Initially developed in 2010 for the UK government, the Organisation Ontology became a W3C standard in January 2014[6] and has been widely used elsewhere[7]. It meets all the requirements, however, this is only so *if* it is used in a particular way, notably if different organisations use common code lists as values, in particular, for properties such as `org:classification` and `org:purpose`.

4.2. ORG-AP-OP

The Application Profile developed by the Publications Office of the European Union underpins their popular whoiswho service[8]. That service provides contact information for staff across the European Institutions and so is focussed on people and the roles they play. Such a service is beyond the scope of the current work although it bears a clear relation in terms of describing the actual institutions. The CPOV should therefore be consistent with the ORG-AP-OP.

4.3. CPSV-AP

The Core Public Service Vocabulary and its Application Profile define a number of terms that are closely related to the CPOV. For example, the administrative level, the type of organisation, and its home page. It might be appropriate to include these terms in the CPOV.

[To add more]

4.4. Existing Solution: Popolo

The Popolo Project created a vocabulary for describing organisations[9] that reuses a lot of the terms from the ORG Ontology but adds in some new ones. As well as providing serialisations in RDF, it also offers a JSON schema that introduces a few minor tweaks to some of the term names. This means that the same data serialised as JSON and RDF will have different names for, for example, 'seeAlso.' The Popolo vocabulary does not model change events as such but does record previous names, with start and end dates. This is similar to the approach taken in the data behind the Publications Office's whoiswho tool.

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[6] https://www.w3.org/TR/vocab-org
[7] https://www.w3.org/2011/gld/wiki/ORG_Implementations
[8] http://whoiswho.europa.eu
[9] http://www.popoloproject.com/specs/organization.html

4.5. Publicbodies.org

Publicbodies.org is an Open Knowledge Labs project that aims to aggregate data on public organisations around the world, making them searchable in a single database on the publicbodies.org website. The tools and relevant open source code are hosted on Github, as is the data submitted by volunteers.

The project uses a simple tabular data model, which is under constant evolutionary change.

5. CORE PUBLIC ORGANISATION VOCABULARY

The data model for the CPOV is shown in Figure 3. It is largely a subset (profile) of the Organisation Ontology covering the basic description of an organisation and the purpose(s) that it exists to serve.

5.1. Class: Public Organisation

The Public Organisation class represents the organisation. One organisation may comprise several sub-organisations and any organisation may have one or more organisational units. Each of these is described using the same properties and relationships.

In the RDF release of the CPOV, this class is bound to `org:FormalOrganization`.

5.1.1. Property: preferred label [1..1]

As defined in the ORG Ontology, a *preferred label* is used to provide the primary, legally recognised name of the organisation. An organisation may only have one such name in any given language. Primary names may be provided in multiple languages with multiple instances of the *preferred label* property.

In the RDF release of the CPOV, this property is bound to `skos:prefLabel`.

5.1.2. Property: alternative label [0..n]

In line with ORG and SKOS itself, an organisation may have any number of alternative or informal names, irrespective of language.

In the RDF release of the CPOV, this property is bound to `skos:altLabel`.

5.1.3. Property: identifier [0..n]

Many organisations are referred to by an acronym or some other identifier. For example, among the EU institutions, the ECB is the identifier for the European Central Bank, OLAF for the European Anti-Fraud Office, and so on. These are formally recognised by the European Commission which provides a list of such acronyms[10]. Analogous lists should be used in other contexts.

In the RDF release of the CPOV, this property is bound to `org:identifier`.
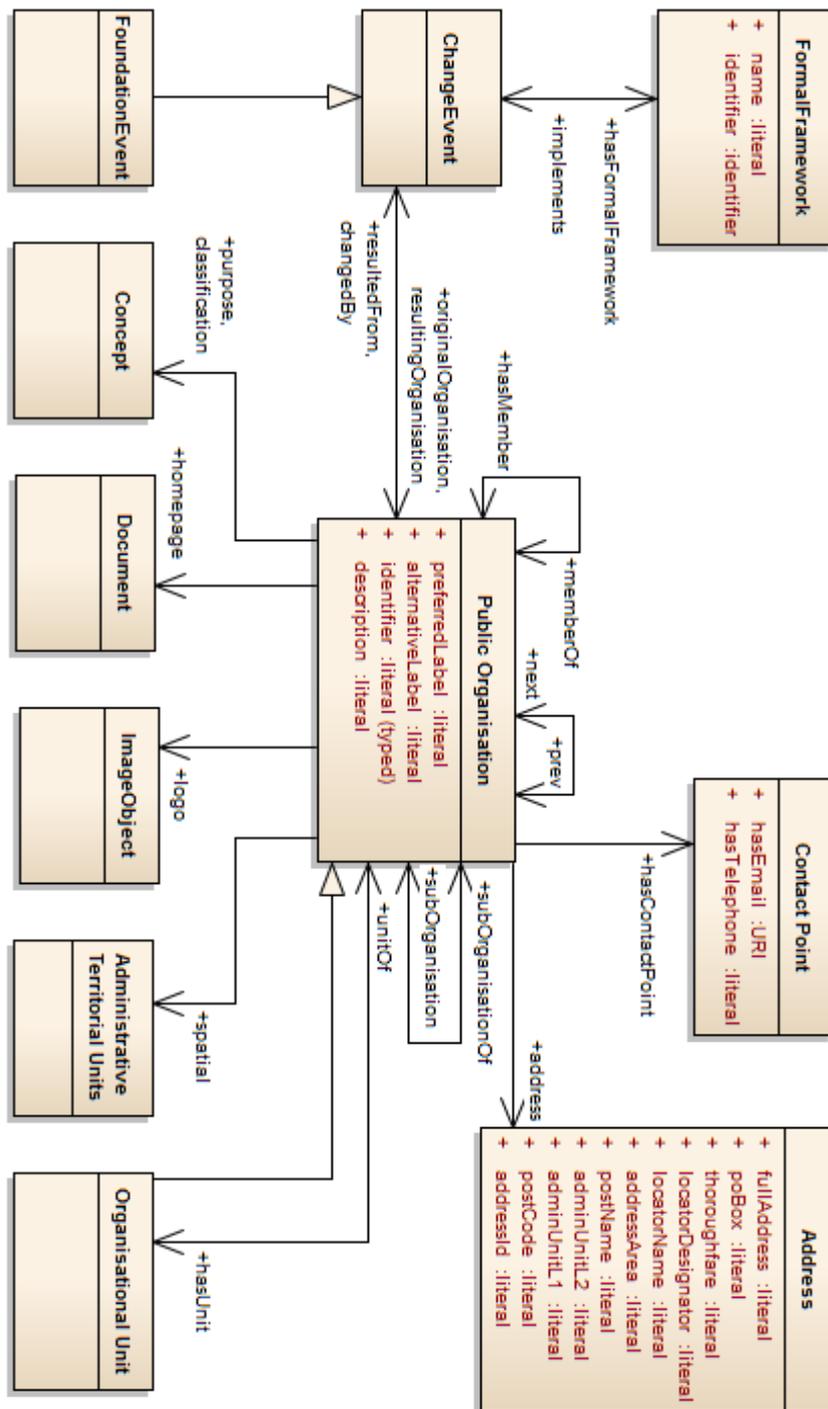
5.1.4. Property: description [0..1]

This property provides a textual description of the organisation.

In the RDF release of the CPOV, this property is bound to `dcterms:description`.

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[10] http://ec.europa.eu/eurostat/ramon/cybernews/abbreviations.htm

Figure 3: Data model for the CPOV

5.1.5. Property: spatial [1..n]

This property links an organisation to the administrative region(s) that it covers. The value of the properly should be the URI of the region as defined in the Named Authority List of that name within the Publications Office's Metadata Registry.

In the RDF release of the CPOV, this property is bound to `dcterms:spatial`.

5.1.6. Property: purpose [0..n]

This property links an organisation to its function(s) which are expressed as a SKOS Concept Scheme. The ORG ontology suggests that this property can also be thought of as meaning 'remit' or 'responsibility.' Ideally this will link to a COFOG code but where this isn't possible or appropriate, other controlled vocabularies may be used.

In the RDF release of the CPOV, this property is bound to `org:purpose`.

5.1.7. Property: classification [1..n]

This property links an organisation to a SKOS Concept that provides a classification. As an example, the Publications Office of the European Union provides a Named Authority list of Organisation Types[11] which is appropriate for European institutions. Other classification schemes should be used at other levels of public organisation.

In the RDF release of the CPOV, this property is bound to `org:classification`.

5.1.8. Property: homepage [0..1]

A property to link an organisation to its website homepage. The value of this property is a URL irrespective of the serialisation of the data.

In the RDF release of the CPOV, this property is bound to `foaf:homepage`.

5.1.9. Property: logo [0..n]

A property to link an organisation to its logo. The value of this property is an object that provides the URL of the image and essential metadata about it, notably its dimensions.

In the RDF release of the CPOV, this property is bound to `schema:ImageObject`.

5.1.10. Property: hasUnit (inverse: unitOf) [0..n]

Organisations typically comprise many departments, units, teams etc. Each of these is modelled in the CPOV as an organisation which is linked *from* the parent organisation with hasUnit and *to* the parent with unitOf.

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[11] http://publications.europa.eu/mdr/authority/organization-type/index.html

In the RDF release of the CPOV, hasUnit is bound to `org:hasUnit` and `unitOf` is bound to `org:unitOf`.

5.1.11. Property: memberOf (inverse: hasMember) [0..n]

One organisation may be a member of another without being a sub organisation, i.e. they are independent entities. These properties allow such relationships to be captured.

In the RDF release of the CPOV, these properties are bound to `org:memberOf` and `org:hasMember`.

Xavier to provide real world example.

See issue https://joinup.ec.europa.eu/asset/cpov/issue/simple-or-more-complex-membership-model

5.1.12. Property: contactPoint [1..1]

The contact point property links to a VCard that provides contact information such as a phone number and e-mail address.

For consistency with DCAT and the DCAT-AP, in the RDF release of the CPOV, this property is bound to `dcat:contactPoint`.

5.1.13. Property: address [0..n]

Since the range of the contactPoint property is a VCard, the contact point class *may* include address information. However, for consistency with INSPIRE, the Location Core Vocabulary's Address class should be used.

In the RDF release of the CPOV, address is bound to `locn:address`.

5.1.14. Properties: prev/next

In some cases it is necessary to be able to create an ordered sequence of organisations that precede and succeed each other. To support this, the CPOV includes the well known relationships of previous and next to allow such sequences to be captured and computed.

In the RDF release of the CPOV, these properties are bound to `xhv:prev` and `xhv:next`.

5.2. Classes: ChangeEvent, FoundationEvent

Public organisations are formed and changed in response to events. This may be the result of new legislation, new policies, taking on new obligations etc. The CPOV captures this in its Change Event class but recognises the specific case of an organisation's foundation as being sufficiently distinct to require a sub class of Change Event.

In the RDF release of the CPOV, ChangeEvent is bound to `org:ChangeEvent`, FoundationEvent is in the CPOV's own namespace, i.e. `cpov:FoundationEvent`.

5.2.1. Property: resultingOrganisation (inverse: resultedFrom) [0..n]

This property links a Change Event or a Foundation Event to the organisation that resulted from it.

In the RDF release of the CPOV, these properties are bound to `org:resultingOrganization` and `org:resultedFrom`.

5.2.2. Property: originalOrganisation (inverse changedBy) [0..n]

The originalOrganisation property links a Change Event to the organisation that existed before the change. Although the Foundation Event class is defined as a sub class of Change Event, it is inappropriate to use the originalOrganisation property with the Foundation Event class.

In the RDF release of the CPOV, these properties are bound to `org:originalOrganization` and `org:changedBy`.

5.2.3. Property: has formal framework (inverse changedBy) [0..n]

hasFormalFramework links a Change Event or Foundation Event to a piece of legislation or a policy document that prompted the change. These concepts and properties are defined in the Core Public Service Vocabulary (CPSV).

In the RDF release of the CPOV, these properties are bound to `cpsv:hasFormalFramework` and `cpsv:implements`.

5.3. Class: Formal Framework

This class and its properties are defined in the Core Public Service Vocabulary and may represent legislation or official policy that leads to a change event, including the establishment of the organisation.

In the RDF release of the CPOV, this class is bound to `cpsv:FormalFramework`.

5.4. Class: Address

The Address class is defined in the Location Core Vocabulary. Its properties are closely bound to the INSPIRE data model for addresses. In particular, it separates out building names and numbers from the name of the thoroughfare. This is in contrast to VCard which conflates them into 'street address.' The Location Core Vocabulary does, however, borrow the fullAddress property from VCard as a means of providing the full text of the address as a literal.

In the RDF release of the CPOV, this class is bound to `locn:Address`.

6. CONFORMANCE STATEMENT

7. ACCESSIBILITY AND MULTILINGUAL ASPECTS

8. CHANGE LOG

Changes since version 2:
- Revision of the data model to include membership relations
- Inclusion of the Address class from the LOCN vocabulary in line with discussion on Joinup.
- Addition of Foundation Event as sub class of Change Event.
- Addition of Contact Point
- Completion of listing of all terms in the CPOV except properties of Formal Framework and Address which are defined elsewhere.
- Requirements moved to use cases section; requirement to support organograms removed and an explanation provided. The relevant use case was retained however.
- Publicbodies.org added as an existing solution.