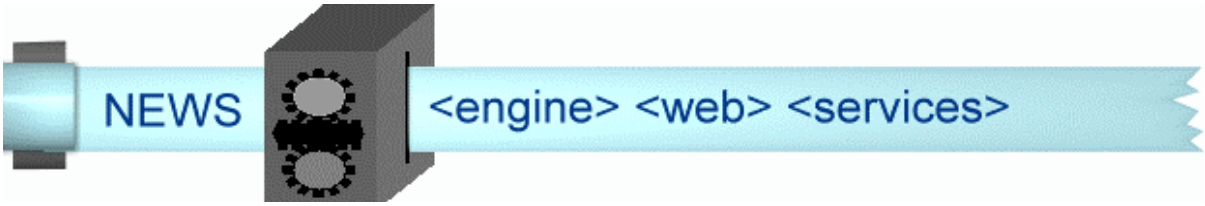

IPTC Standard Annotation

Integration of chosen IPTC standards into the NEWS Ontology

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Abstract:

The application of Semantic Web technologies to the news domain, requires the definition of ontologies that describe the concepts involved in this domain and their relationships. In the context of NEWS project, these ontologies will be used, together with current standards for news content description, to represent and manipulate news content. The NEWS Ontology should therefore be compatible with current journalism standards. In this deliverable, we introduce the relations between the main modules in the NEWS Ontology, which have been briefly described in D2.2, and IPTC standards.

1 Introduction

The application of Semantic Web technologies to the news domain, requires the definition of ontologies that describe the concepts involved in this domain and their relationships. In the context of NEWS project, these ontologies will be used, together with current standards for news content description, to represent and manipulate news content. The NEWS Ontology should therefore be compatible with current journalism standards.

Perhaps the most important provider of standards to the journalism world is the International Press Telecommunication Council, IPTC [IPTC]. The IPTC was established in 1965 by a group of news organisations including the Alliance Européenne des Agences de Presse, ANPA (now NAA), FIEJ (now WAN) and the North American News Agencies (a joint committee of Associated Press, Canadian Press and United Press International) to safeguard the telecommunications interests of the World's Press. Since the late 1970's IPTC's activities have primarily focussed on developing and publishing Industry Standards for the interchange of news data.

In this deliverable, we introduce the relations between the main modules in the NEWS Ontology, which have been briefly described in D2.2, and IPTC standards. The most important standards considered here are:

- The Subject Reference System, SRS [SRS], and the NewsCodes [NewsCodes]
- NewsML [NewsML]
- NITF [NITF]

But, apart from those of IPTC, some other interesting standards for our purposes, like Dublin Core [DC] and Publishing Requirements for Industry Standard Metadata [PRISM], also exist. Taking this into account, we discuss the relations with these standards in a final section. The rest of this deliverable is structured as follows:

- Section 2 discusses the relation between the IPTC categorization system, which is part of SRS, and the NEWS Categorization Taxonomy module.
- Section 3 relates the NEWS Envelope module, responsible of providing vocabulary for news item life cycle management, with NewsML, NITF and the NewsCodes standards.
- Section 4 briefly describes the Content Annotation module of the NEWS Ontology and how the design of this module has been affected by journalism standards.
- Section 5 relates the NEWS Ontology with relevant, non-IPTC standards like DC and PRISM.

2 The Categorization Taxonomy module and IPTC SRS

One of the objectives of NEWS is to provide means for automatic news categorization. The news item class can be used, for example, to decide which clients might be interested in a certain item and to send it to them (push model). Classification is currently done by hand using basic specific taxonomies[1]. In NEWS we propose to automate the process (with human supervision of the results) and define richer taxonomies, using mappings to the old ones to achieve backwards compatibility.

The Categorization Taxonomy module of the NEWS Ontology provides the basic vocabulary, the classes, used in such a process. It is based on the categorization system of IPTC, which is part of the **Subject Reference System, SRS** [SRS]. This section introduces the SRS system and describes in detail the implementation of the

[1] For example, current taxonomy of ANSA consist of only 11 classes.

CategorizationTaxonomy module. The intended mechanism to relate the classes in the Categorization Taxonomy module with the current categorization systems of EFE and ANSA is also discussed.

2.1 SRS

NewsCodes [NewsCodes], formerly known as Topic Sets, are controlled vocabularies defined by the IPTC which provide values for certain elements and attributes in NewsML or NITF documents. The most basic of these standardized NewsCodes (*Subject Code, Subject Qualifier, Media Type, NewsItem Type* and *Genre*) constitute the IPTC Subject Reference System

For categorization purposes two of these NewsCodes require special attention: the **Subject Code** and **Subject Qualifier** NewsCodes. Their values are used to represent *Subject References*. A Subject Reference describes the content subject (or category) of a news object. It is identified by a fixed eight decimal digit string. The first two digits represent the ***Subject***, which can take values in a range of 17 possibilities such as, for example, *Politics* (11), *Labour* (09), *Religion and Belief* (12), or *Science and Technology* (13). The following three digits represent the ***Subject Matter*** which is optional (000 means none). The last three digits can contain 000 (no value) or a number representing a ***Subject Detail*** (if Subject Matter exists) or a ***Subject Qualifier*** (in the case it does not). Basically the Subject, Subject Matter and Subject Detail act as a kind of three level hierarchy (from more general to more specific). Their values can be found in the Subject Code NewsCodes. The Subject Qualifier is used to make more precise a Subject Reference and its values are defined in the Subject Qualifier NewsCodes.

2.2 Categorization Taxonomy Module

As we have seen in previous subsection, SRS can be seen as a three level hierarchy consisting of Subject, Subject Matter and Subject Detail. Our NEWS Categorization Taxonomy module, takes these values and defines a tree of classes whose root is the *content:NewsItem* class defined in other ontology module: the *Content Annotation* module [Deliverable 2.2]. The result is a taxonomy which currently includes over 1,200 classes.

A single news object can provide information about different issues so it can have several Subject References, belong to different categories. The concrete news items generated by news agencies will be instances of one or more subclasses of *content:NewsItem*. For example, if we have a news item with URI *news_item_uri* related with economy and politics topics, we can define for such a news item the following RDF(S)/TRIPLE triples:

```
// sr04000000 IPTC Subject economy, business and finance
news_item_uri[rdf:type -> iptc_subject:sr04000000].

// sr11000000 IPTC Subject politics
news_item_uri[rdf:type -> iptc_subject:sr11000000].
```

where *iptc_subject* represents the namespace URI of the IPTC Subject NewsCodes normative version (english version).

In addition to the hierarchy, IPTC SRS defines a Subject Qualifier. As we have said, it is used to make a Subject Reference more precise [SRS]. For instance, if a news item is talking about a sport event, we can add a Subject Qualifier saying if it is a male sport (15000001) or female sport (15000002) event.

To link a Subject Reference with a Subject Qualifier we have defined the classes *envelope:SubjectReference* and *envelope:SubjectQualifier* in the *Envelope* module of our ontology [Deliverable 2.2]. The instances of *envelope:SubjectReference* are the Categorization Taxonomy classes. The instances of *envelope:SubjectQualifier* are taken from Subject Qualifier NewsCodes. Using the ternary predicate *envelope:hasQualifierPredicate* defined in the Envelope module, we say that in a certain *content:NewsItem* instance a concrete instance of *envelope:SubjectReference* has a certain *envelope:SubjectQualifier*. Such a ternary predicate can be represented in RDF(S)/TRIPLE using for instance the following triples:

envelope:hasQualifierPredicate[rdf:type -> content:Predicate].
envelope:hasQualifierPredicate[rdf:type -> rdfs:Class].
envelope:has_qualifier_item[rdfs:domain -> envelope:hasQualifierPredicate].
envelope:has_qualifier_item[rdfs:range -> content:NewsItem].
envelope:has_qualifier_subject[rdfs:domain -> envelope:hasQualifierPredicate].
envelope:has_qualifier_subject[rdfs:range -> envelope:SubjectReference].
envelope:has_qualifier_qualifier[rdfs:domain -> envelope:hasQualifierPredicate].
envelope:has_qualifier_qualifier[rdfs:range -> envelope:SubjectQualifier].

Note that instances of *envelope:SubjectReference* are classes, whose instances are concrete news items. The treatment of classes as instances is disallowed in OWL Lite and OWL DL, but not in RDFS, where, for example, the class *rdfs:Class* is an instance of itself [RDFS]. In figure 1 we can see a part of the NEWS Categorization Taxonomy module.

2.3 Relation with ANSA and EFE categorization systems

In the current workflow of EFE and ANSA news agencies, the categorization process is performed by hand and using basic taxonomies. We must provide means to ease the task of mapping the classes in such taxonomies with these in our Categorization Taxonomy module.

As we have said, the categories in the Categorization Taxonomy module are both classes (subclasses of *content:NewsItem*) and instances of *envelope:SubjectReference*. Taking this into account, we propose to define mappings in two ways:

1. Using *rdfs:subClassOf* to represent subsuming relations.
2. Using the property *envelope:equivalentSubject* defined in the Envelope module, which relates two instances of *envelope:SubjectReference* to represent sameness relations.

Of course, new kinds of relations like *envelope:equivalentSubject* can be defined if required. In order to keep separated the different categorization systems, we also propose to define a subclass of *envelope:SubjectReference* for each system, including all possible classes of such system as instances of the subclass of *envelope:SubjectReference*. For instance, in the case of the IPTC categorization system, we have added a subclass of *envelope:SubjectReference* called *iptc_topictype:SubjectCode*. The distinction is also reflected at the namespace level: *SubjectReference* class belongs to the Envelope namespace (because it is defined in the Envelope module), whereas *SubjectCode* belongs to the IPTC Topic Type NewsCodes namespace.

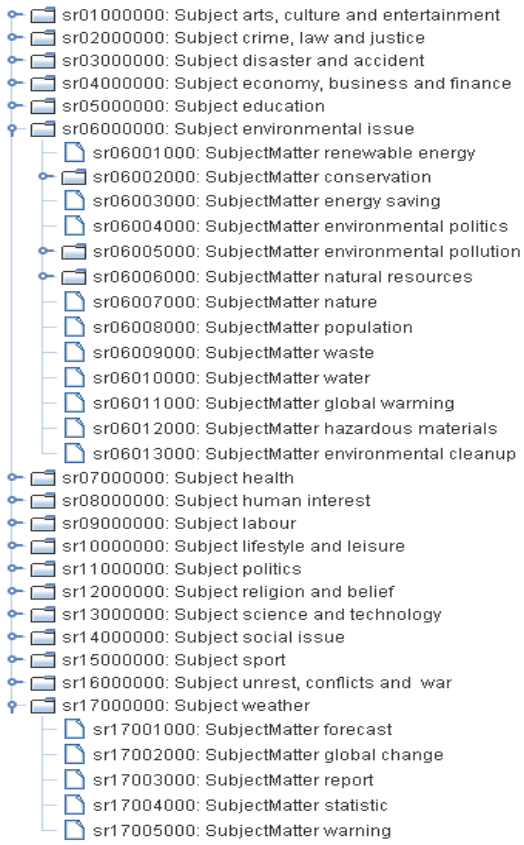

Figure 1: A part of the Categorization Taxonomy module

3 The Envelope module and IPTC standards

Additionally to provide a taxonomy for news item classification, the NEWS Ontology should also provide the vocabulary for news item semantic annotation. This includes both metadata describing the news contents and metadata intended to be used in news item life cycle management by news agencies (priority, creation date, author, etc). The vocabulary for this life cycle management metadata is mainly provided by the Envelope ontology module.

In the design of this module we have taken into account two kinds of standards:

- IPTC news item representation standards, basically NITF and NewsML.
- Metadata standards such as Dublin Core, PRISM and the IPTC NewsCodes.

This section describes the relations between the NEWS Ontology Envelope module and the IPTC related standards. We start by briefly introducing the standards and then describing their relations with the Envelope module. The relations with non-IPTC standards are covered in section 5.

3.1 IPTC News Representation Standards

The field of journalism has for a long time been using news representation formats both for exchange and archiving of news items. The need to add metadata to the text items sent by the news agencies to the journals, forced the appearance of the ANPA 1312 text

format, defined by the *American National Press Association, ANPA*[2] in 1979. Later the IPTC launched the IPTC 7901 standard, also for text news items. For a long time, both standards have persisted, being used each by a number of different news agencies. Also another standard, named IIM [IIM] was defined by the IPTC for the exchange of binary news content, mainly photos.

At the beginning of the 1990s, the IPTC decided that the currently available formats were becoming obsolete, and started the process of definition of new formats. By that time, XML was already in full expansion, so the IPTC decided that the new formats should be based on XML. Some of the reasons for the interest of the IPTC in defining further new formats were:

- Some necessary new metadata fields were not available in previous formats. For instance, ANPA 1312 had no metadata for describing the companies or persons involved in a given news item.

- The support for multimedia was very limited or nonexistent. ANPA 1312 and IPTC 7901 are purely text formats. IIM can contain any binary document, but it is not able to structure the content (for instance, it is not possible to define in any standard way that a given text news item and a photo describe the same event).

- No support for the news life cycle was supported in previous formats: news item version, news item components, related news items, multilingualism, etc.

The first of the new generation of news standards was named NITF [NITF] and was oriented towards text news items, although it allowed the embedding of multimedia content in the text. It was enriched with a broad set of metadata that can be defined for a news item as a whole (date, location, headline, etc.) and can also be used to tag entities that appear in the content of the news item (inline metadata) such as persons, companies, and so on.

A second new standard, named NewsML [NewsML], was defined to support multimedia news items and their life cycle. NewsML is mainly an envelope for one or several news multimedia content items. Among others, NewsML provides the following features:

- Support for news content in any media and format.

- Rich metadata for description of a news item as a whole, including entities appearing in a news item.

- News items composition and structure.

- Definition of news items relations.

- News item life cycle. News versions.

- Rights information

It has to be noted that NITF and NewsML should not be seen as competitors but as complementary standards. For instance, since NewsML is only an envelope for news content, it is not possible to tag entities inside a text news item content, as is the case in NITF. All the metadata present in a NewsML document refers to one content item as a whole (of the possible several content items described by the NewsML document). On the other hand, NITF has no support for structuring news content into subcomponents. In fact, IPTC recommends NITF as the preferred text format inside a NewsML document.

[2] http://www.naa.org

3.2 IPTC Metadata Standards: NewsCodes

As we have seen in 2.1 the IPTC NewsCodes are controlled vocabularies that provide values for certain NewsML and NITF document fields. They can be defined by users, but for interoperability reasons, several essential NewsCodes are standardized by IPTC and its use is recommended. There are currently 28 standardized NewsCodes, some of them, apart from those mentioned in 2.1, are:

- **Format:** *BMP, IIM, MP3, MPEG* or *NITF* among others.
- **Genre:** *Current, History, Obituary*, etc.
- **Media Type:** *Text, Graphic, Photo, Audio, Video* and *Animation*.
- **News Item Type:** Contains values like *DTD, Alert, News* and so on.
- **Priority:** Values from 1 (highest) to 9 (user defined).
- **Role:** *Main, Supporting, Preview,* etc.
- **Topic Type:** *Subject, MediaType, MimeType,* etc.

3.3 The Envelope module

Basically, this module contains a set of definitions of properties(instances of *rdf:Property*) which can be used to describe instances of the class *content:NewsItem*. Following the approach of NewsML, we have divided these properties according to their function into:

- **Management Metadata Properties** These contain information relevant to the management process of a news item, as for example its urgency (*envelope:has_urgency*), its status (*envelope:has_status*, it is *usable*, *cancelled*, etc) or the UTC time it has been created (*envelope:has_creation_time_UTC*). An interesting special kind of properties in this group are those which relate two news items, saying that one is an update of the other (*envelope:is_update_of*) or that one is derived from the other (*envelope:is_derived_from*), for example.

- **Administrative Metadata Properties** Which provide information about the provenance of a certain news item. Examples of these kind of properties are: *envelope:has_provider*, *envelope:has_creator* or *envelope:has_contributor* among others.

- **Rights-related Metadata Properties** These contain information about the rights pertaining to a certain news item. For example: *envelope:has_rights_usage_type*, *envelope:has_right_geography*, *envelope:has_rights_start_date* or *envelope:has_rights_holder* among others.

- **Descriptive Metadata Properties** With information describing the contents of a news item as a whole like, for example, the location where the news story has occurred *envelope:has_location*, the language used in elaborating the piece of news *envelope:has_language*, or the expected target audience of the item *envelope:has_interest*. A property which is specially important is the one which relates the news item with the entities that are explicitly mentioned in the contents of that news item, *envelope:has_entity_occurrence*. The classes of these entities are provided by the NEWS Content Annotation module.

- **Physical, content-related Metadata Properties** Also provide information about the contents, but from the physical point of view: its binary size (*envelope:has_binary_size*), the codec used in coding it (for multimedia news items, *envelope:has_audio_codec*, *envelope:has_video_codec*), its MIME type (*envelope:has_mime_type*) or the number of words that it contains (for textual news items, *envelope:has_word_count*), among others.

- **Others** Keywords (*envelope:has_keyword*), the headline of the news item (*envelope:has_headline*) or its abstract (*envelope:has_abstract*) are also included in the description as specific properties.

Most of the properties included here are taken from NITF and NewsML news items representations. In Annex A we can see the relations between Envelope module properties and NITF/NewsML DTD components.

The Envelope module also contains definitions taken from IPTC NewsCodes. We have included these NewsCodes in several different ways:

1. The values in IPTC Topic Type NewsCodes are included as classes.
2. The values in IPTC Subject Code NewsCodes are included as subclasses of *content:NewsItem* but also as instances of *iptc_topictype:SubjectCode* (see 2.2).
3. The values in CharacteristicsProperty NewsCodes are included as properties of *content:NewsItem*.
4. The values defined in the rest of IPTC NewsCodes are included as instances of some class which typically provides from IPTC Topic Type NewsCodes. For instance, IPTC priorities are included in this module in the following way: we have defined a class *iptc_topictype:Priority* whose instances are the values defined in IPTC Priority NewsCodes As different priority systems could be defined by news agencies, we have defined a superclass of *iptc_topictype:Priority* called *envelope:Priority* which is the class used as range in the *has_priority* property. New priority systems could be modelled by simply adding a subclass of *envelope:Priority* and including as instances their priority values.

In order to ease the task of translating the NewsCodes XML files into TRIPLE, we have developed an XSLT stylesheet which automatically generates a TRIPLE file from a Topic Set XML file representing NewsCodes. The source code of such stylesheet can be found in Annex C.

Finally, another aspect which is covered by this module is the mapping between the priority system of IPTC (with 9 levels of priority) and the system currently used by EFE and ANSA news agencies, based on the one in ANPA (with only 5 levels of priority). Also, some rules and properties are defined to allow priority and urgency comparison, and the ordering of news items using such properties (thus allowing to obtain the news items with a bigger priority than a certain one, for instance). The result is a module consisting of more than 50 classes, more than 90 properties and over 500 instances.

3.4 Additional remarks in relation with the Envelope module

- **Meta-metadata:** NewsML data model allows the definition of meta-metadata. Basically this meta-metadata provides information about who has defined the metadata, its importance, or the confidence of the assignment, among others (see NewsML specification version 1.1, section 5.4.6 Metadata Assigment). In the examples provided by EFE and ANSA, meta-metadata is not included. This also seems to be the case of NewsML examples from Reuters which are publicly available via Web at [Reuters-NewsML]. Furthermore, it seems than NITF does not directly predefine elements for meta-metadata assignment. Having this into account, we have decided not to include meta-metadata properties, though they can be easily included if required.

- **Component model:** A certain news item can contain several different news components. Both NITF (with *media* element) and NewsML (with *NewsComponent* element) DTDs define elements for multiple object inclusion in a news item. For example, a NewsML news item can contain three components, one of them an image, other a text and the other one a video. Analyzing NewsML examples from EFE and Reuters, it seems that, though it is theoretically possible,

in practice most news items contain only data of a single component. Having this into account, we have decided to include a single class in our ontology, *content:NewsItem,* which can be used both for NewsML news items and their internal news components. That is, a NewsML with a single content component can be represented by a single NewsItem of NEWS Ontology. Anyway, if several components are included in a single news item, we can simply duplicate the metadata shared by all components and convert each NewsML component in a NEWS Ontology *content:NewsItem* instance. Using subproperties of *content:is_related_with* we can define associations among these instances, like for example *content:shares_envelope_with* which relates two instances which are included in the same NewsML file.

- **Text search over metadata:** NITF and NewsML data models allow some components to have plain text values. We have tried to formalize the values when possible, defining the ranges of properties as being instances of a certain class. We have tried to avoid text-valued properties, because we do not expect to perform text based search over metadata elements. Some exceptions to this rule are properties as *envelope:has_abstract*, *envelope:has_headline* or *envelope:has_keyword*. We have included such properties because their values are expected to be used with the URI of the news item as a result to be shown to users. That is, when a user performs some query, instead of providing him with a simple list of URIs, we provide him also with the headline, abstract and keywords of the news items. We do so in order to give the user a better view of news items' contents.

- **Handling Revisions:** As part of its life cycle, a news item can suffer changes and revisions. NITF and NewsML provide elements (like *revision-history* in NITF or *ThisRevisionCreated* and *RevisionHistory* in NewsML) which allow the relation of news items with its revision history. In NEWS Envelope module, we do not directly include such revision metadata, but following the approach in NewsML specification, section 5.11, we deal with revisions as completely new news items with their own metadata. Using relations between instances of *content:NewsItem* like *envelope:is_derived_from* or *envelope:is_update_of* we can follow the evolution of a certain news item.

4 The Content Annotation module and IPTC standards

The Content Annotation module of the NEWS Ontology, provides the basic vocabulary for news item content annotation. It has been built taking SUMO [SUMO] as a basis, but some concepts from MILO [MILO] have also been included. The result is a generic top-level ontology with more than 200 classes, more than 100 properties and over 30 rules. It also contains more than 6,000 instances of different classes: countries, languages, currencies, cities, companies, persons, etc.

One of the main problems when building this ontology module was to select what concepts from SUMO/MILO should be included or discarded. SUMO/MILO are very wide ontologies with hundreds of concepts, but we feel that some of these concepts (like *Arthropod* or *ComplexNumber*) are of little utility in the news domain. So, a pruning strategy should be applied to filter non-relevant concepts. The approach we have followed to address this problem is to use a middle-out strategy, like suggested in ontology building methodologies like [Uschold96].

The main idea is to look at the basic entities included in journalism standards (inline annotation elements from NITF, values of IPTC Topic Type NewsCodes, see table in figure 3) and map these entities to classes in SUMO/MILO. These classes should be included in our ontology in order to be compatible with the standards. Once we have these seed classes, we can start the process of pruning. For each seed we look for its ancestors until the top concept of the ontology (*content:Entity*) and include them,

obtaining as result a seed tree. For each class included in this tree we then look for non included descendants, deciding to include them or not using criteria like:

- Relation with at least one of the first level categories of IPTC categorization system. For instance, the concept *content:Book* is related with IPTC subject 01000000, which can be used as type of a news items talking about arts, culture and entertainment. We can think, for example, of a news item which informs about the presentation of a new book of a well known writer.

- Usefulness in other components of the NEWS Ontology. For example, the concept *content:HumanLanguage* is useful for Envelope module, because instances of this concept are used as the range of one property of class *content:NewsItem* which relates the instance of news item with its language.

The resultant taxonomy is then reviewed in order to add/remove classes if needed. Other components of the module (properties, rules) are defined taking as basis the selected classes and relevance criteria as the former ones.

NITF	IPTC Topic Type	NEWS Ontology
Chron	--	Date, Year, Instant, Interval
Event	Event	Process
Location	Location, Town, Country, Region	GeopoliticalArea, GeographicArea, Country, County, StateOrProvince, City, CityDistrict
Money	Currency	CurrencyMeasure, CurrencyMeasureUnit
Org	Organization, Company	Organization, Corporation, NonProfitOrganization, PoliticalOrganization, TerroristOrganization, ...
Person	Person	Human, Man, Woman
Function	Job	SocialRole, Position, Function
Num	---	Number
Postaddr	---	Address
Virtloc	---	URI, URN, URL
---	Language	Language, HumanLanguage
---	ProductOrService	Product, IntentionalProcess

Figure 3: Some basic entities in NITF, IPTC Topic Type NewsCodes and NEWS Content Annotation module

As can be seen, the IPTC standards provide the basic classes used as seed in the pruning process to develop the Content Annotation module. The election of other components to be included in such module is also affected by relevance criteria which are based on the component relation with first level IPTC categories.

5 Relations with non-IPTC standards

Additionally to IPTC standards, there exist in the state of the art other widely accepted standards which are also useful as a possible source of metadata to be included in our ontology. Specifically, in the context of NEWS, we have analyzed two of these standards: DC and PRISM, and have tried to be as compatible as possible with them. In this section we briefly introduce these standards and their relations with the NEWS Ontology.

5.1 DC

The Dublin Core Metadata Initiative [DCMI] is an open forum born in 1995 with the objective of developing a basic, easy to learn and use, multidomain vocabulary for resource description. The Dublin Core Metadata Element Set is standardized by ISO (ISO 15836:2003(E)) and has versions in 25 different languages. The basic element set consists of 15 elements such as, for example: *title, creator, subject, date, format, type, identifier, rights* and so on. This basic element set has been extended giving origin to DCMI Metadata Terms [DCMI-MT]. The extension includes the addition of new elements (such as *abstract*, *references*, etc.), defining a vocabulary for values of *type* element (DCMI Type Vocabulary) and defining encoding schemes to be used as values for certain elements (for example *format* can take values from Internet Media Types).

5.2 PRISM

Publishing Requirements for Industry Standard Metadata [PRISM] is developed by *International Digital Enterprise Alliance, IDEAlliance*[3] and provides a vocabulary of metadata to be used in management and processing of any kind of content which can be published (books, journal content, etc.). PRISM provides both the elements used to describe content and the vocabularies supplying the possible values of those elements. The main purposes of PRISM metadata are to support the description of resources as a whole, the definition of management metadata (for example, rights), the specification of relations between resources, and the representation of inline metadata. The specification contains more than 70 elements, some of them obtained from the DC basic set. These elements are grouped into several categories:

- **General purpose:** *dc:identifier, dc:title, dc:creator*, etc.
- **Provenance :** *dc:publisher, prism:issn, dc:source*, etc.
- **Timestamps:** *prism:creationDate, prism:modificationDate, prism:expirationDate*, etc.
- **Subject Description:** *dc:coverage, dc:subject, prism:section*, etc.
- **Resource Relationships:** *prism:isPartOf, prism:isBasedOn, prism:requires, prism:isReferencedBy*, etc.
- **Rights and Permissions (PRISM Rights Language, PRL):** *dc:rights, prl:usage*, etc.
- **Controlled Vocabularies (PRISM Controlled Vocabularies, PCV):** *pcv:descriptor, pcv:definition, pcv:label, pcv:vocabulary*, etc.
- **Inline markup (PRISM Inline Markup, PIM):** *pim:event, pim:industry, pim:location, pim:person*, etc.

5.3 DC, PRISM and the NEWS Ontology

The standards that we have introduced here provide mainly metadata for news item life cycle management, so they are related basically with the Envelope module of NEWS

[3] http://www.idealliance.org

Ontology. Nevertheless PRISM provides some metadata elements for inline content annotation, and these are associated with Content Annotation module components.

As a general rule, the elements defined in these standards can be related with these in our ontology in two different ways:

1. **Class source:** In a similar way as elements for inline markup in NITF, PRISM inline markup elements can provide us information about the most interesting entities to be included in the Content Annotation module
2. **Subproperty relationships:** Some of the properties in our ontology can be seen as subproperties of those in DC and PRISM. This is so, because the relations in the standards can be interpreted as having a more general domain/range than ours, for instance, *prism:isReferencedBy* can relate in principle any kind of resource (we can think on it as having *rdf:Resource* as domain/range) whereas our *envelope:is_referenced_by* is intended to relate only concrete instances of *content:NewsItem*.

In Annex A we can see some of the relations between these standards and the NEWS Ontology modules. Some other relations exist, for example, *dc:subject* is related with the categorization of the news items, and *dc:identifier* could be used to represent the news item identifier. It should be noted that both standards are taken as source for an interesting set of properties: those which are subproperties of *envelope:is_related_with.* Such properties (as for example *envelope:alternative_language*, *envelope:alternative_format*, etc) allow the linkage between news items. We also should indicate that though the mappings between NEWS Ontology components and the elements in these standards are possible, they are not currently available in the ontology. The description that we have included here is merely descriptive, and intended to be used as basis in case we want to make such mappings explicit.

6 Conclusions and Future Work

In this deliverable, we have described the existent relations between the main modules in NEWS Ontology: Categorization Taxonomy, Envelope and Content Annotation and well known and widely accepted international standards. As NEWS project aims at developing technologies for the professional journalism world, the design of our ontology has mainly taken into account standards from IPTC, the most outstanding journalism standardization consortium. But, as other well know, non-IPTC, useful standards exist, we have also taken a look at them.

As a general conclusion, we can say that these standards, jointly with user requirements expressed in D1.1, have guided the process of knowledge capture, inspiring the design of the most important NEWS Ontology modules. Now that we have this first version of the ontology, the testing in real working environments and the integration with the rest of NEWS components, will be our future lines.

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Annex A

The NEWS Ontology Envelope module and its relations with standards

Comments:

- Basic elements of DC (*dc* namespace) are also part of in PRISM, so they are only included in the Relations to DC slot, not repeated in the PRISM one.
- The reference versions for these comparisons are:
  - NITF 3.2
  - NewsML 1.1
  - PRISM 1.2
  - DC, DCTERMS (2005-01-10)
- When describing the relations with NewsML, we add sometimes the concrete section of the NewsML v1.1 specification where information about that issue can be found.

envelope:has_priority
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Priority*
Documentation ✍ Property used to associate to a certain news item its priority. This priority is defined in IPTC Priority NewsCodes as "the relative importance of a NewsItem for distribution". The range of this property is an instance of *envelope:Priority*. Currently there are two subclasses of *envelope:Priority* representing two different priority systems: IPTC ones (*iptc_topictype:Priority*) and ANPA ones (*anpa_priority:Priority*). The values for IPTC priorities are taken from IPTC Priority NewsCodes, whereas the ANPA ones are taken from news agencies examples.
Relations:
- **NewsML ✍ *Priority* element (see NewsML v1.1 specification, section 5.4.5)**
- **NITF ✍ Element *urgency***
- **DC**
- **PRISM**

envelope:has_headline
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Label*
Documentation ✍ Stores the manually generated news item headline. The range of this property is a Label (text with language), to allow that a certain news item can have several headlines in different languages (related with multilingualism capabilities).
Relations:
- **NewsML ✍ Element *Headline* (section 5.10)**
- **NITF ✍ Element *headline***
- **DC ✍ dc:title**
- **PRISM ✍ prism:objectTitle**

envelope:has_keyword
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Label*
Documentation ✍ Relates a certain news item with one or more Labels each of these containing a word (in a certain language) relevant to describe the content of the news item.
Relations:
- **NewsML ✍ Element *KeywordLine* (section 5.10)**
- **NITF ✍ Elements *key-list* and *keyword***
- **DC**
- **PRISM**

envelope:has_abstract
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Label*
Documentation ✍ Stores Ontology Ltd. automatically generated abstract (as a Label, so language information can be included for multilinguism purposes).
Relations:

- **NewsML ✍ Can be implemented as a kind of *NewsLine* (see section 5.10)**
- **NITF ✍ Element *abstract***
- **DC ✍ dc:description, dcterms:abstract**
- **PRISM ✍ prism:teaser**

envelope:has_news_item_type
Domain ✍ *content:NewsItem*
Range ✍ *envelope:NewsItemType*
Documentation ✍ Management metadata property which associates a news item with its type (instance of *envelope:NewsItemType*). These instances are those currently included in ITPC News Item Type NewsCodes, which are defined as instances of *iptc_topictype:NewsItemType*, a subclass of *envelope:NewsItemType*.
Relations:

- **NewsML ✍ Element *NewsItemType* (section 5.6.1)**
- **NITF ✍ Attribute *tobject.type* of element *tobject***
- **DC ✍ dc:type**
- **PRISM**

envelope:has_creation_time_UTC
Domain ✍ *content:NewsItem*
Range ✍ *time:Instant*
Documentation ✍ Management metadata property which associates a news item with the UTC (Universal Time Coordinated) time when it has been created. The range of this property is a timestamp (represented by a time:Instant instance)
Relations:

- **NewsML ✍ Elements *FirstCreated* and *ThisRevisionCreated* (section 5.6)**
- **NITF ✍ Element *dateline* (*story.date* child)**
- **DC ✍ dc:date, dcterms:created**
- **PRISM ✍ prism:creationDate**

envelope:has_creation_time_local
Domain ✍ *content:NewsItem*
Range ✍ *time:Instant*
Documentation ✍ Management metadata property which associates a news item with the local time when it has been created. The local time is that of the place where the news item has been created, not the one of the place where the story inside the item occurs. The range of this property is a timestamp (currently represented by a time:Instant instance).
Relations:

- **NewsML ✍ Elements *FirstCreated* and *ThisRevisionCreated* (section 5.6)**
- **NITF ✍ Element *dateline* (*story.date* child)**
- **DC ✍ dc:date, dcterms:created**
- **PRISM ✍ prism:creationDate**

envelope:has_status
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Status*
Documentation ✍ Management metadata property. It relates a news item with its status (instance of class *envelope:Status*). The values currently included in the ontology are those of IPTC Status NewsCodes, which are included as instances of *iptc_topictype:Status*, a subclass of *envelope:Status*. Examples of these values are *usable, embargoed*, etc.

Relations:

- **NewsML ✍ Element *Status* (section 5.6.4)**
- **NITF ✍ Can be included in *meta* element (not by default)**
- **DC**
- **PRISM**

envelope:has_urgency
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Urgency*
Documentation ✍ Management metadata property. Its value (an instance of *envelope:Urgency*) indicates the urgency of the news item. This urgency is defined in IPTC Urgency NewsCodes as "the relative importance of a NewsItem for editorial examination". At the moment, are allowed values those included in IPTC Urgency NewsCodes, which are defined as instances of *iptc_topictype:Urgency*.
Relations:

- **NewsML ✍ Element *Urgency* (section 5.6.6)**
- **NITF ✍ Though an *urgency* element exists, its definition indicates that the contents are related with distribution priority, so it is related with the has_priority property. In practice, news agencies typically consider both fields equivalent.**
- **DC**
- **PRISM**

envelope:is_related_with
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Management metadata property. General, symmetric property which is used to indicate that there exists a relation between two news items. Several subproperties of this one are used to define more in detail the concrete relation.
Relations:

- **NewsML ✍ Element *AssociatedWith* (section 5.6)**
- **NITF ✍ Element *a* with its attributes *rel* and *rev* used to specify the kind of relationship.**
- **DC ✍ dc:relation**
- **PRISM**

envelope:is_derived_from, envelope:has_derived_item
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Subproperties of *envelope:is_related_with*. *Is_derived_from* states that the instance of news item in the domain is derived from the instance of news item in the range. *Has_derived_item* is the inverse property. For more information in this topic, see the NewsML 1.1 specification, section 5.6.8.
Relations:

- **NewsML ✍ Element *DerivedFrom* (section 5.6.8)**
- **NITF ✍ See is_related_with**
- **DC ✍ dc:relation, dc:source, dcterms:hasVersion, dcterms:isVersionOf**
- **PRISM ✍ prism:hasVersion, prism:isVersionOf**

envelope:is_update_of, envelope:has_update
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Subproperties of *envelope:is_related_with*. *Is_update_of* states that the instance of news item in the domain is and updated version of the range news item instance. *Has_update* is the inverse property.
Relations:

- **NewsML ✍ For revision & update linking (see 3.4 of this document)**
- **NITF ✍ For revision & update linking (see 3.4 of this document)**

- **DC ✍ dc:relation**
- **PRISM ✍ prism:hasCorrection, prism:isCorrectionOf, prism:hasPreviousVersion**

envelope:shares_envelope_with
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Subproperty of *envelope:is_related_with*. It states that the instance of news item in the domain and the news item instance in the range both share the same envelope, that is, both of them are contained by a third news item instance. The requirement of being able to include a news item inside another one is derived from NewsML compatibility issues.
Relations:

- **NewsML ✍ Modelling container structure (see 3.4 of this document)**
- **NITF ✍ Modelling container structure (see 3.4 of this document)**
- **DC ✍ dc:relation**
- **PRISM**

envelope:contains, envelope:is_contained_by
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Subproperties of *envelope:is_related_with*. *Contains* states that the instance of news item in the domain contains (is envelope of) the news item instance in the range. *Is_contained_by* is the inverse property.The requirement of being able to include a news item inside another one is derived from NewsML compatibility issues.
Relations:

- **NewsML ✍ Modelling container structure (see 3.4 of this document)**
- **NITF ✍ Modelling container structure (see 3.4 of this document)**
- **DC ✍ dc:relation, dcterms:hasPart, dcterms:isPartOf**
- **PRISM ✍ prism:hasPart, prism:isPartOf**

envelope:alternative_format
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Subproperty of *envelope:is_related_with*. It states that the instances in the domain and the range both have the same contents but presented in different formats. For instance, it can be used to relate a video news item of an interview with another news item containing the textual transcription of the interview. It is a symmetric relation.
Relations:

- **NewsML ✍ See is_related_with**
- **NITF ✍ See is_related_with**
- **DC ✍ dc:relation, dcterms:hasFormat, dctems:isFormatOf**
- **PRISM ✍ prism:hasFormat, prism:isFormatOf**

envelope:alternative_language
Domain ✍ *content:NewsItem*
Range ✍ *content:NewsItem*
Documentation ✍ Subproperty of *envelope:is_related_with*. It states that the instances in the domain and the range both have the same contents but presented in different languages. It is a symmetric relation.
Relations:

- **NewsML ✍ See is_related_with**
- **NITF ✍ See is_related_with**
- **DC ✍ dc:relation**
- **PRISM ✍ prism:hasTranslation, prism:isTranslationOf**

envelope:hasRolePredicate
Documentation ✍ Instance of *content:Predicate* and *rdfs:Class* which models a ternary relation used to specify the role played by a news item instance which is inside another news item instance. It is a ternary predicate, because it associates three objects: the news item container, the news item inside the container, and the role of last news item in the container context.
Relations:
- ?? **NewsML ✍ Element Role (see section 5.7)**
- ?? **NITF ✍ No several news items inside same NITF document**
- ?? **DC**
- ?? **PRISM**

envelope:has_container_item
Domain ✍ *envelope:hasRolePredicate*
Range ✍ *content:NewsItem*
Documentation ✍ In the ternary relation *envelope:hasRolePredicate*, this property stores the container news item.
Relations: see hasRolePredicate

envelope:has_content_item
Domain ✍ *envelope:hasRolePredicate*
Range ✍ *content:NewsItem*
Documentation ✍ In the ternary relation *envelope:hasRolePredicate*, this property stores news item which is inside the container, the content news item.
Relations: see hasRolePredicate

envelope:has_role
Domain ✍ *envelope:hasRolePredicate*
Range ✍ *envelope:Role*
Documentation ✍ In the ternary relation *envelope:hasRolePredicate*, this property stores the role of the content news item inside the container news item. The role is represented by an instance of *envelope:Role* class. Current values are those included in IPTC Role NewsCodes, which are defined as instances of *iptc_topictype:Role*, a subclass of *envelope:Role*.
Relations: see hasRolePredicate

envelope:has_system_path
Domain ✍ *content:NewsItem*
Range ✍ *xsd:string*
Documentation ✍ Administrative metadata property. Its value (a string) gives the location of the news item in the backend storage system.
Relations:
- ?? **NewsML ✍ Elements *FileName* and *SystemIdentifier* (see section 5.9.1)**
- ?? **NITF ✍ Can be added as *meta* element (not by default)**
- ?? **DC**
- ?? **PRISM**

envelope:has_provider
Domain ✍ *content:NewsItem*
Range ✍ *content:Agent*
Documentation ✍ Administrative metadata property. It associates a news item with an instance of *content:Agent*. This agent represents the provider of the news item (typically used when such news item has been obtained from a third party). It may differ from the news item creator.
Relations:
- ?? **NewsML ✍ Element *Provider* (section 5.9.1)**
- ?? **NITF ✍ Can be added as *meta* element (not by default)**
- ?? **DC**

?? **PRISM**

envelope:has_creator
Domain ✍ *content:NewsItem*
Range ✍ *content:Agent*
Documentation ✍ Administrative metadata property. It associates an instance of news item with an instance of *content:Agent*, which represents the agent (person, organization, ...) who has created the news item.
Relations:
?? **NewsML** ✍ **Element *Creator* (section 5.9.1)**
?? **NITF** ✍ **Elements *byline* and *byttl***
?? **DC** ✍ **dc:creator**
?? **PRISM**

envelope:has_source
Domain ✍ *content:NewsItem*
Range ✍ *content:Agent*
Documentation ✍ Administrative metadata property. It relates a news item instance with an *content:Agent* who has provided material used in the news item creation process.
Relations:
?? **NewsML** ✍ **Element *Source* (section 5.9.1)**
?? **NITF** ✍ **Can be included using a *meta* element**
?? **DC**
?? **PRISM**

envelope:has_contributor
Domain ✍ *content:NewsItem*
Range ✍ *content:Agent*
Documentation ✍ Administrative metadata property. It relates a news item instance with an *content:Agent* who has modified or enhanced the news item after its creation.
Relations:
?? **NewsML** ✍ **Element *Contributor* (section 5.9.1)**
?? **NITF** ✍ **Can be included using a *meta* element**
?? **DC** ✍ **dc:contributor**
?? **PRISM**

envelope:has_usage_rights
Domain ✍ *content:NewsItem*
Range ✍ *envelope:UsageRights*
Documentation ✍ Property which associates to a certain news item a *content:UsageRights* instance. This instance has several properties which describe the rights associated to the news item. The reason of using and intermediate class instead of applying the properties directly to the *content:NewsItem* as domain is that a concrete item can have several different rights contexts dependent on the geography. For more information on this property and rights related metadata, see NewsML 1.1 specification, section 5.9.2
Relations:
?? **NewsML** ✍ **See *RightsMetadata* element (section 5.9.2)**
?? **NITF** ✍ **See element *rights***
?? **DC** ✍ **dc:rights**
?? **PRISM** ✍ **prism:copyright**

envelope:kind_of_rights
Domain ✍ *envelope:UsageRights*
Range ✍ *envelope:KindOfRights*
Documentation ✍ Property which relates an *envelope:UsageRights* instance with the kind of rights it provides. Kind of rights can be for instance *none* (no rights), *unknown* or

use (rights granted). The allowed values currently included are taken from PRISM standard.
Relations:

- **NewsML ✍ Element *Limitations* (see section 5.9.2)**
- **NITF ✍ See element *rights***
- **DC ✍ dc:rights**
- **PRISM ✍ prism:copyright, prl:usage**

envelope:has_rights_usage_type
Domain ✍ *envelope:UsageRights*
Range ✍ *envelope:UsageType*
Documentation ✍ Property which relates an *envelope:UsageRights* instance with the intended usage type to which the rights inside such instance apply. For instance, if the news item is intended to be used in television contexts, certain rights would apply, whereas in radio context the rights could be different. In NewsML specification, this field is defined as a natural language one. We have decided to define the range of this property as a new class *envelope:UsageType*, whose instances would be possible usage types.
Relations:

- **NewsML ✍ See *RightsMetadata* element (section 5.9.2)**
- **NITF ✍ See element *rights***
- **DC ✍ dc:rights**
- **PRISM ✍ prism:copyright, prl:industry**

envelope:has_rights_geography
Domain ✍ *envelope:UsageRights*
Range ✍ *content:GeographicArea*
Documentation ✍ Property which relates an *envelope:UsageRights* instance with the *content:GeographicArea* where such rights pertain.
Relations:

- **NewsML ✍ See *RightsMetadata* element (section 5.9.2)**
- **NITF ✍ See element *rights***
- **DC ✍ dc:rights**
- **PRISM ✍ prism:copyright, prl:geography**

envelope:has_rights_holder
Domain ✍ *envelope:UsageRights*
Range ✍ *content:Agent*
Documentation ✍ Property which relates an *envelope:UsageRights* instance with the *content:Agent* who owns usage rights.
Relations:

- **NewsML ✍ See *RightsMetadata* element (section 5.9.2)**
- **NITF ✍ See element *rights***
- **DC ✍ dc:rights, dcterms:rightsHolder, prism:rightsAgent**
- **PRISM ✍ prism:copyright**

envelope:has_rights_start_date
Domain ✍ *envelope:UsageRights*
Range ✍ *time:Date*
Documentation ✍ Property which relates an *envelope:UsageRights* instance with the *time:Date* (year, month, day) when the rights start to be appliable.
Relations:

- **NewsML ✍ See *RightsMetadata* element (section 5.9.2)**
- **NITF ✍ See element *rights***
- **DC ✍ dc:rights, dcterms:dateCopyrighted**
- **PRISM ✍ prism:copyright, prism:embargoDate**

envelope:has_rights_end_date

Domain ✍ *envelope:UsageRights*
Range ✍ *time:Date*
Documentation ✍ Property which relates an *envelope:UsageRights* instance with the *time:Date* when the rights end to be appliable.
Relations:

- **NewsML ✍ See *RightsMetadata* element (section 5.9.2)**
- **NITF ✍ See element *rights***
- **DC ✍ dc:rights**
- **PRISM ✍ prism:copyright, prism:expirationDate**

envelope:has_language
Domain ✍ *content:NewsItem*
Range ✍ *content:Language*
Documentation ✍ Descriptive metadata property. It associates a news item instance with the language (*content:Language*) used to represent its information (audio, text, ...) Currently, instances of languages are taken from ISO 8601 standard.
Relations:

- **NewsML ✍ Element *Language* (section 5.9.3)**
- **NITF ✍ Attribute *xml:lang* in element body**
- **DC ✍ dc:language**
- **PRISM**

envelope:has_genre
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Genre*
Documentation ✍ Descriptive metadata property. It relates a news item instance with its genre, represented by an envelope:Genre instance. Current instances of genre are taken from IPTC Genre NewsCodes and include among others values as: *forecast, opinion, obituary*, etc. They are defined as instances of *iptc_topictype:Genre*, which is a subclass of *envelope:Genre*.
Relations:

- **NewsML ✍ Element *Genre* (see section 5.9.3)**
- **NITF ✍ Attribute *tobject.property.type* of *tobject.property***
- **DC**
- **PRISM ✍ prism:category**

envelope:has_interest
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Interest*
Documentation ✍ Descriptive metadata property. It is used to relate a news item instance with the human collective which represents its intended audience. The range of this property is a *envelope:Interest* instance, which provides information about the human group which conforms the audience (for instance, juddish people or elder than 18 years old people) and the intended relevance for such group.
Relations:

- **NewsML ✍ Element *OfInterestTo* (see section 5.9.3)**
- **NITF ✍ Element *doc-scope* is used to specify the geographic area where the contents of the document can be relevant. In our case we deal with groups of people, but we can simply define new groups of people which are constituted by humans who live in a certain geographic area. Due to this reason we consider the geographic representation covered by groups of people representation.**
- **DC ✍ dc:coverage, dcterms:spatial (both related in the same way as NITF *doc-scope*), dcterms:audience.**
- **PRISM**

envelope:has_location
Domain ✍ *content:NewsItem*

Range ✍ *content:GeographicArea*
Documentation ✍ Descriptive metadata property. It associates an instance of news item with the concrete location where the story described by the contents has taken place.
Relations:

- **NewsML ✍ Element *Location* (see section 5.9.3)**
- **NITF ✍ Element *location* child of *dateline***
- **DC**
- **PRISM**

envelope:has_entity_occurrence
Domain ✍ *content:NewsItem*
Range ✍ *content:Entity*
Documentation ✍ Descriptive metadata property. It associates a news item with an *content:Entity* which is explicitly mentioned in the news item instance.
Relations:

- **NewsML ✍ Element *TopicOccurrence* (see section 5.9.3)**
- **NITF ✍ Elements *chron, location, person, classifier*, etc.**
- **DC**
- **PRISM ✍ With PRISM Inline Markup elements**

envelope:related_with_entity
Domain ✍ *content:NewsItem*
Range ✍ *content:Entity*
Documentation ✍ Descriptive metadata property. It associates a news item with an *content:Entity* which is not explicitly mentioned in the news item instance, but which has been related to the news item due to some inferencing process.
Relations: Its main purpose is distinguishing between actual entity occurrence and inferred entity relation. See has_entity_occurrence.

envelope:has_media_type
Domain ✍ *content:NewsItem*
Range ✍ *envelope:MediaType*
Documentation ✍ Content metadata property which relates a news item instance with the media type of its contents. Media types are represented by instances of class *envelope:MediaType*, which include those in ITPC Media Types NewsCodes, like for example *Photo, Text, Audio*, etc. They are defined as instances of *iptc_topictype:MediaType* which is a subclass of *envelope:MediaType*.
Relations:

- **NewsML ✍ Element *MediaType* (section 5.8)**
- **NITF ✍ This standard is mainly thought to include *text* in the contents, and this is the assumed value for media type. If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the media type.**
- **DC**
- **PRISM**

envelope:has_format
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Format*
Documentation ✍ Content metadata property which relates a news item instance with the format of its contents. Formats are represented by instances of class *envelope:Format*, which include those in ITPC Format NewsCodes, like for example *IIM, ANPA1312*, etc. The values in such NewsCodes are defined as instances of class *iptc_topictype:Format*, which is a subclass of *envelope:Format*.
Relations:

- **NewsML ✍ Element *Format* (section 5.8)**

- **NITF ✍ NITF itself is a kind of format, so this information is not neccesary in NITF news items (its value is always NITF)**
- **DC ✍ dc:format, dcterms:medium**
- **PRISM**

envelope:has_mime_type
Domain ✍ *content:NewsItem*
Range ✍ *envelope:MimeType*
Documentation ✍ Content metadata propertywhich relates a news item instance with the mime type of its contents. Mime typesare represented by instances of class *envelope:MimeType*, which include those in ITPC Mime Types NewsCodes, like for example *image/gif, text/css*, etc. The values in such NewsCodes are defined as instances of class *iptc_topictype:MimeType*, which is a subclass of *envelope:MimeType*.
Relations:

- **NewsML ✍ Element *MimeType* (section 5.8)**
- **NITF ✍ See has_media_type**
- **DC**
- **PRISM**

envelope:has_notation
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Notation*
Documentation ✍ Content metadata propertywhich relates a news item instance with the notation used to represent its contents. Notationsare represented by instances of class *envelope:Notation*, which include those in ITPC Notation NewsCodes, like for example *NITF, XML, ITU-G711*, etc. The values in such NewsCodes are defined as instances of class *iptc_topictype:Notation*, which is a subclass of *envelope:Notation*.
Relations:

- **NewsML ✍ Element *Notation* (section 5.8)**
- **NITF ✍ NITF is itself a notation, so this property is not neccesary (its value can be assumed to be NITF)**
- **DC**
- **PRISM**

envelope:has_data_encoding
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Encoding*
Documentation ✍ Content metadata propertywhich relates a news item instance with the encoding used in representing its contents. Encodings are represented by instances of class *envelope:Encoding*, which include those in ITPC Encoding NewsCodes, like for example *zip* or *base64*. The values in such NewsCodes are defined as instances of class *iptc_topictype:Encoding*, which is a subclass of *envelope:Encoding*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_binary_size
Domain ✍ *content:NewsItem*
Range ✍ *units:InformationMeasure*
Documentation ✍ Content metadata property which relates a news item instance with the binary size of its contents. Binary sizesare represented by instances of class *units:InformationMeasure*, which allows the election of different units (bits, bytes, kilobytes, etc) and values as range of this property.

Relations:

- **NewsML ✍ Element *Characteristics* (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property. For the full item contents, a *meta* element in the head could be used to store the value of this property.**
- **DC ✍ dcterms:extent**
- **PRISM ✍ prism:byteCount**

envelope:has_video_codec
Domain ✍ *content:NewsItem*
Range ✍ *envelope:VideoCodec*
Documentation ✍ Content metadata property which relates a news item instance with the video codec used to codify its contents. Video codecs are represented by instances of class *envelope:VideoCodec*, which include those in ITPC VideoCoder NewsCodes, like for example *MPEG* or *H.261*. The values in such NewsCodes are defined as instances of class *iptc_topictype:VideoCodec*, which is a subclass of *envelope:VideoCodec*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_audio_codec
Domain ✍ *content:NewsItem*
Range ✍ *envelope:AudioCodec*
Documentation ✍ Content metadata property which relates a news item instance with the audio codec used to codify its contents. Audio codecs are represented by instances of class *envelope:AudioCodec*, which include those in ITPC AudioCoder NewsCodes, like for example *MP3* or *Real Audio*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_frames_per_second
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the frames per second information on video news items. The number of frames per second is represented as an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_average_bit_rate
Domain ✍ *content:NewsItem*
Range ✍ *units:InformationFlowMeasure*
Documentation ✍ Content metadata property which is used to specify the average bit rate of multimedia news items content. The bit rate is represented by an instance of class *units:InformationFlowMeasure* which allows the election of different units (bits per second, bytes per second, etc) and values as range of this property.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_time_duration
Domain ✍ *content:NewsItem*
Range ✍ *time:Duration*
Documentation ✍ Content metadata property which relates a news item instance with the time duration of its contents. Durations are represented by instances of class *time:Duration*, which, as a subclass of *unit:TimeMeasure*, allows the election of different units (seconds, minutes, hours etc) and values as range of this property.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC ✍ dcterms:extent**
- **PRISM**

envelope:has_bits_per_sample
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the number of bits per sample in audio news items. The number of bits per sample is represented as an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_video_coder_version
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Version*
Documentation ✍ Content metadata property which relates a news item instance with the version number of the video codec used to codify its contents. Video codec version numbers are represented by instances of class *envelope:Version*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**

- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_audio_coder_version
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Version*
Documentation ✍ Content metadata property which relates a news item instance with the version number of audio codec used to codify its contents. Audio codec version numbers are represented by instances of class *envelope:Version*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_color_space
Domain ✍ *content:NewsItem*
Range ✍ *envelope:ColorSpace*
Documentation ✍ Content metadata property which relates a news item instance with the color space value in which image file resides. Color spaces are represented by instances of *envelope:ColorSpace*, including those defined by IPTC Color Space NewsCodes, like for example *RGB* or *YUV*. These instances are defined as instances of *iptc_topictype:ColorSpace*, which is a subclass of *envelope:ColorSpace*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_image_height_pixels
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property, which is used to specify the height of the image stored in the news item in pixels. The number of pixels is represented as an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_image_width_pixels
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*

Documentation ✍ Content metadata property which is used to specify the width of the image stored in the news item in pixels. The number of pixels is represented as an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_resolution_dpi
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the resolution of the image stored in the news item in dots per inch. The number of pixels is represented as an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_animation_type
Domain ✍ *content:NewsItem*
Range ✍ *envelope:AnimationType*
Documentation ✍ Content metadata property. It is used when the content of the news item is an animation to specify its type. Animation types are represented by instances of class *envelope:AnimationType*. Current instances of such class are taken from Characteristics Property NewsCodes (from comments) and included as instances of *iptc_topictype:AnimationType*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_height_width_ratio
Domain ✍ *content:NewsItem*
Range ✍ *xsd:float*
Documentation ✍ Content metadata property which is used to specify the ratio between the height and the width of the image stored in the news item. The ratio number is represented by an XML Schema float number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_embedded_text
Domain ✍ *content:NewsItem*
Range ✍ *content:Boolean*
Documentation ✍ Content metadata property. Allowed values are booleans represented by an XML Schema boolean literal. The value is true when text is embedded inside the data.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ For the full item, a *meta* element could be included. If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_alphabet
Domain ✍ *content:NewsItem*
Range ✍ *content:Alphabet*
Documentation ✍ Content metadata property which relates a news item instance with the alphabet used in representing its textual contents. Alphabets are represented by instances of class *content:Alphabet*, which include for example *greek*, *arabic* or *roman* alphabets among others. This property could be useful in countries like Japan where more than one alphabet can be used.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ A *meta* element could be used (not by default)**
- **DC**
- **PRISM**

envelope:has_font
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Font*
Documentation ✍ Content metadata property which relates a news item instance with the font used in representing its textual contents. Fonts are represented by instances of class *envelope:Font*, which include properties to specify font type, size, etc.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ A *meta* element could be used (not by default)**
- **DC**
- **PRISM**

envelope:has_format_version
Domain ✍ *content:NewsItem*
Range ✍ *envelope:Version*
Documentation ✍ Content metadata property which relates a news item instance with the version of the format of its contents. Format versions are represented by instances of class *envelope:Version*.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ The NITF version can be included in the attribute *version* of the element *nitf***
- **DC**
- **PRISM**

envelope:has_word_count
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the number of words in textual news items. The number of words is represented by an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ A *meta* element could be used (not by default)**
- **DC ✍ dcterms:extent**
- **PRISM ✍ prism:wordCount**

envelope:has_pixel_depth_bits
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the pixel depth in bits of an image news item. The pixel depth is represented by an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_IIM_image_type
Domain ✍ *content:NewsItem*
Range ✍ *envelope:ImageType*
Documentation ✍ Content metadata property which relates a image news item instance with the its IIM (Information Interchange Model) image type. IIM image types are represented by instances of class *envelope:ImageType*, taken from IIM specification[IIM].
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_rotation
Domain ✍ *content:NewsItem*
Range ✍ *units:AngleMeasure*
Documentation ✍ Content metadata property which is used to specify the value of the rotation which is necessary to preview the image. The rotation angle is represented by an *units:AngleMeasure* instance, which allows to specify both the value and the measure unit (*degrees*, *radians*, etc).
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**

- **PRISM**

envelope:has_sampling_frequency
Domain ✍ *content:NewsItem*
Range ✍ *units:FrequencyMeasure*
Documentation ✍ Content metadata property which is used to specify the sampling frequency in audio news items. Sampling frequencies are represented by instances of *units:FrequencyMeasure*, to allow the election of different units (*hertz*, *kilohertz* etc) and values as range of this property.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_number_of_audio_channels
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the number of channels in audio news items. The number of channels is represented as an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_vbr
Domain ✍ *content:NewsItem*
Range ✍ *xsd:boolean*
Documentation ✍ Content metadata property. The values of this property are boolean, being true when the multimedia contents inside the news items have variable bit rate and false otherwise.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_number_of_frames
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the number of frames in video news items. The number of frames is represented by an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**

- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_number_of_key_frames
Domain ✍ *content:NewsItem*
Range ✍ *xsd:nonNegativeInteger*
Documentation ✍ Content metadata property which is used to specify the number of key frames in video news items. This number of frames is represented by an XML Schema nonNegativeInteger number.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

envelope:has_video_sampling_method
Domain ✍ *content:NewsItem*
Range ✍ *envelope:SamplingMethod*
Documentation ✍ Content metadata property which is used to specify the sampling method used in video news items. The sampling method is represented by an instance of class *envelope:SamplingMethod*, which includes properties to specify the three digits that compose the sampling method (see IPTC Characteristic Properties NewsCodes.
Relations:

- **NewsML ✍ Element Characteristics (section 5.8) & CharacteristicsProperty NewsCodes**
- **NITF ✍ If a binary object is embedded into a NITF document using *media* element and its children, the metadata associated to such object (element *media-metadata*) could specify the value of this property.**
- **DC**
- **PRISM**

Annex B

Concrete example of a EFE-NITF News Item representation in TRIPLE

EFE-NITF news item:

```
<?xml version="1.0" encoding='iso-8859-1'?>
<!DOCTYPE nitf SYSTEM 'nitf-x020-strict.dtd'>
<nitf>
   <head>
      <title>P.VASCO-ATENTADOS MADRIDCámara Vasca condena "manipulación informativa"
            de Gobierno de PP</title>
      <meta name='wordcnt' content='531'/>
      <meta name='keyword' content='P.VASCO-ATENTADOS MADRID'/>
      <meta name='author-coded' content='O99ZqLwKrw29ZqLwKp23nwJ'/>
      <meta name='author-decoded' content='efea0840/efea0828'/>
      <meta name='priority' content='R'/>
      <meta name='tabsposition' content=''/>
      <meta name='relevancy' content='C'/>
      <meta name='newtype' content='Avance'/>
      <meta name='category' content='POL'/>
      <meta name='category-full' content='POLITICA'/>
      <meta name='source' content='EFEDATA'/>
      <meta name='efeextended-category' content='POL:POLITICA,PARLAMENTO,REGIONES-
         AUTONOMIAS TRI:JUSTICIA-INTERIOR-SUCESOS,TERRORISMO'/>
      <docdata>
         <doc-id id-string='VI9222'/>
         <date.issue norm='20040507 112600'/>
      </docdata>
   </head>
   <body lang='es.es'>
      <body.head>
         <hedline>
            <hl1>P.VASCO-ATENTADOS MADRID</hl1>
            <hl2>Cámara Vasca condena "manipulación informativa" de Gobierno de PP</hl2>
         </hedline>
         <byline></byline>
         <dateline>
            <location>Vitoria</location>
         </dateline>
      </body.head>
      <body.content>
         <p> Vitoria, 7 may (EFE)- El Parlamento Vasco condenó hoy los "intentos de manipulación
            informativa" del Gobierno del PP en torno a la autoría del atentado del 11 de marzo en
```

Madrid, por considerar que "sólo tenía por objetivo la rentabilidad electoral partidista". La iniciativa, presentada por el PSE-EE, contó con el apoyo de PNV, EA y EB-IU. El PP respaldó sólo uno de sus puntos, a través del cual la institución se solidarizó con las víctimas del atentado; Sozialista Abertzaleak no participó en las votaciones. En la proposición no de ley aprobada, también se manifiesta la solidaridad de la institución con la concejal socialista del Ayuntamiento de Vitoria, Natalia Rojo, el portavoz del PNV en las Juntas Generales de Alava, Alvaro Iturritxa, y con el parlamentario de EA Martín Aranburu. Estos tres cargos están encausados por un presunto delito electoral, después de que el PP denunciase ante la Junta Electoral su participación en las concentraciones que se celebraron el 13 de marzo. El parlamentario socialista Oscar Rodríguez consideró que las concentraciones del 13 de marzo fueron "espontáneas" y acusó al PP de "pretender empañar los resultados del 14 de marzo" y "perseguir penalmente la búsqueda de la verdad".EFE ma/tx

</p>
</body.content>
</body>
</nitf>

Representation in TRIPLE:

_20040507T112600_VI9222_POL_531[envelope:has_language->iso_language:es].

_20040507T112600_VI9222_POL_531_title_es[rdf:type->envelope:Label].

_20040507T112600_VI9222_POL_531_title_es[envelope:LBL_text->"P.VASCO-ATENTADOS MADRID Cámara Vasca condena 'manipulación informativa' de Gobierno de PP"].

_20040507T112600_VI9222_POL_531_title_es[envelope:LBL_language->iso_language:es].

_20040507T112600_VI9222_POL_531[envelope:has_headline->_20040507T112600_VI9222_POL_531_title_es].

_20040507T112600_VI9222_POL_531[envelope:has_keyword->"P.VASCO-ATENTADOS MADRID"].

_20040507T112600_VI9222_POL_531[envelope:has_creator->efea0840].

_20040507T112600_VI9222_POL_531[envelope:has_creator->efea0828].

_20040507T112600_VI9222_POL_531[envelope:has_priority->yanpa_priority:routine].

_20040507T112600_VI9222_POL_531[envelope:has_creation_time_UTC->_20040507112600].

_20040507112600[rdf:type>time:Instant].

_20040507112600[time:has_year->2004].

_20040507112600[time:has_month->5].

_20040507112600[time:has_day->7].

_20040507112600[time:has_hour->11].

_20040507112600[time:has_minute>26].

_20040507112600[time:has_second->0].

_20040507T112600_VI9222_POL_531[rdf:type>iptc_subject:sr11009000].

_20040507T112600_VI9222_POL_531[rdf:type>iptc_subject:sr11012000].

_20040507T112600_VI9222_POL_531[rdf:type->iptc_subject:sr16001000].

_20040507T112600_VI9222_POL_531[envelope:has_location->content:Vitoria_City].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:Madrid_City].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence>content:PP_Party].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:PSE-EE_Party].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:PNV_Party].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence>content:EA_Party].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:Parlamento_Vasco].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:Ayuntamiento_de_Vitoria].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:Juntas_Generales_de_Alava].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence->content:Alvaro_Iturritxa].

_20040507T112600_VI9222_POL_531[envelope:has_entity_ocurrence>content:Oscar_Rodriguez].

Annex C

Source code of XSLT Stylesheet for Topic Set to TRIPLE translation

```
<?xml version="1.0" encoding="iso-8859-1"?>
<!--
        Stylesheet to transform ITPC NewsML TopicSets into TRIPLE
        Author: Norberto Fernández [berto@it.uc3m.es]
         Version 1.0: The Topic Type is included as rdfs:Class
-->

<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

<xsl:output method="text" encoding="ISO-8859-1"/>


<xsl:template match="/">

 <xsl:variable name="namespace">
   <xsl:value-of select="translate(string(//TopicSet/@Duid),'.','_')"/>
 </xsl:variable>
 <xsl:variable name="type">
   <xsl:value-of select="string(//TopicType/@FormalName)"/>
 </xsl:variable>

<xsl:value-of select="concat($namespace,' := &amp;quot;')"/>
 <xsl:value-of select="concat(string(//NewsIdentifier/PublicIdentifier),'#&amp;quot;.')"/>
 <xsl:call-template name="newline"/>
 <xsl:call-template name="newline"/>

 <xsl:value-of select="concat($namespace,':',$type)"/>
 <xsl:text>[rdf:type>rdfs:Class].</xsl:text>
 <xsl:call-template name="newline"/>
 <xsl:call-template name="newline"/>

 <xsl:for-each select="//Topic">
   <xsl:value-of select="concat('// ',string(Description[@Variant='Name']))"/>
   <xsl:call-template name="newline"/>
   <xsl:value-of select="concat($namespace,':',string(@Duid))"/>
   <xsl:text>[rdf:type></xsl:text>
   <xsl:value-of select="concat($namespace,':',$type)"/>
   <xsl:text>].</xsl:text>
   <xsl:call-template name="newline"/>
   <xsl:call-template name="newline"/>
 </xsl:for-each>

</xsl:template>

<xsl:template name="newline">
<xsl:text>
</xsl:text>
</xsl:template>

</xsl:stylesheet>
```