

# XTM data model proposal

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Ontopia AS

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This proposal is meant as design input to the XTM Data model group, and uses an EXPRESS schema with accompanying EXPRESS-G diagrams to define the data model. It follows the ISO syntax very closely, and is perhaps best seen as an interpretation of the ISO syntax, with some added opinions.

Brief explanations of EXPRESS-G constructs:

- boxes are entities (that is, class definitions)
- rounded boxes with names are proxies for entities defined on other pages
- rounded boxes without names indicate references from other pages
- dotted lines represent optional properties
- S[0:?] means 'a set of zero or more members'
- thick lines indicate inheritance relationships
- stars in front of property names indicate a uniqueness requirement

I recommend starting with the diagrams and only afterwards moving on to the textual schema. Note that the textual schema contains some important comments.

Input from Steve Pepper, Kal Ahmed and Geir Ove Grønmo is gratefully acknowledged.

( \*

## TOPICMAPS

EXPRESS specification:

\*)

SCHEMA TOPICMAPS;

( \*

## Association

EXPRESS specification:

\*)

ENTITY Association;

assoc\_type

:OPTIONAL Topic;

linktype

:OPTIONAL STRING;

scopes

:SET OF Topic;

roles

:SET [1:?] OF AssociationRole;

END\_ENTITY;

( \*

Attribute definitions:

linktype

: I don't think this has sufficient utility to defend its presence and that it ought to be removed.

## AssociationRole

EXPRESS specification:

\*)

ENTITY AssociationRole;

player

:Topic;

anchrole

:OPTIONAL STRING;

roletype

:OPTIONAL Topic;

END\_ENTITY;

( \*

Attribute definitions:

player

: Even though the syntax permits multiple players, this ought perhaps to be mapped to multiple roles each with single players in the data model.

anchrole

: I don't think this has sufficient utility to defend its presence and that it ought to be removed.

## BaseName

### EXPRESS specification:

```
*)  
  ENTITY BaseName  
    SUBTYPE OF(Name);  
  END_ENTITY;  
(*
```

## DisplayName

### EXPRESS specification:

```
*)  
  ENTITY DisplayName  
    SUBTYPE OF(Name);  
    locator : OPTIONAL Locator;  
  END_ENTITY;  
(*
```

## Facet

### EXPRESS specification:

```
*)  
  ENTITY Facet;  
    linktype : OPTIONAL STRING;  
    facet_type : OPTIONAL Topic;  
    values : SET [1:?] OF FacetValue;  
  END_ENTITY;  
(*
```

### Attribute definitions:

linktype : I don't think this has sufficient utility to defend its presence and that it ought to be removed.

## FacetValue

### EXPRESS specification:

```
*)  
  ENTITY FacetValue;  
    facet_value : OPTIONAL STRING;  
    facet_value_2 : OPTIONAL Topic;  
    locator : SET [1:?] OF Locator;  
  END_ENTITY;  
(*
```

### Attribute definitions:

facet\_value : This should not be removed, since it allows facet values to be strings and not just topics.

# Locator

## EXPRESS specification:

```
*)  
  ENTITY Locator  
    ABSTRACT SUPERTYPE;  
  END_ENTITY;  
(*
```

# Name

## EXPRESS specification:

```
*)  
  ENTITY Name  
    SUPERTYPE OF (ONEOF(BaseName, SortName, DisplayName));  
  scopes : SET OF Topic;  
  name : STRING;  
  END_ENTITY;  
(*
```

## Attribute definitions:

name : The name is really optional for DisplayName; I just couldn't find a way to redeclare it as such in EXPRESS.

# Occurrence

## EXPRESS specification:

```
*)  
  ENTITY Occurrence;  
    scopes : SET OF Topic;  
    rolename : OPTIONAL STRING;  
    occ_type : OPTIONAL Topic;  
    locator : Locator;  
  END_ENTITY;  
(*
```

## Attribute definitions:

rolename : I don't think this has sufficient utility to defend its presence and that it ought to be removed.

# SortName

## EXPRESS specification:

```
*)  
  ENTITY SortName  
    SUBTYPE OF (Name);  
  END_ENTITY;  
(*
```

# Topic

## EXPRESS specification:

```
*)
  ENTITY Topic;
    names                :SET OF TopicName;
    id                   :STRING;
    types                :SET OF Topic;
    scopes               :SET OF Topic;
    linktype             :OPTIONAL STRING;
    identity             :OPTIONAL STRING;
    occurrences          :SET OF Occurrence;
  INVERSE
    roles                :SET OF AssociationRole FOR player;
  UNIQUE
    unique_id : id;unique_identity : identity;
  END_ENTITY;
(*
```

## Attribute definitions:

linktype : Does not seem to be part of the data model, and should thus probably not be here.

# TopicMap

## EXPRESS specification:

```
*)
  ENTITY TopicMap;
    topics                :SET OF Topic;
    added_themes          :SET OF Topic;
    associations          :SET OF Association;
    facets                :OPTIONAL SET OF Facet;
  END_ENTITY;
(*
```

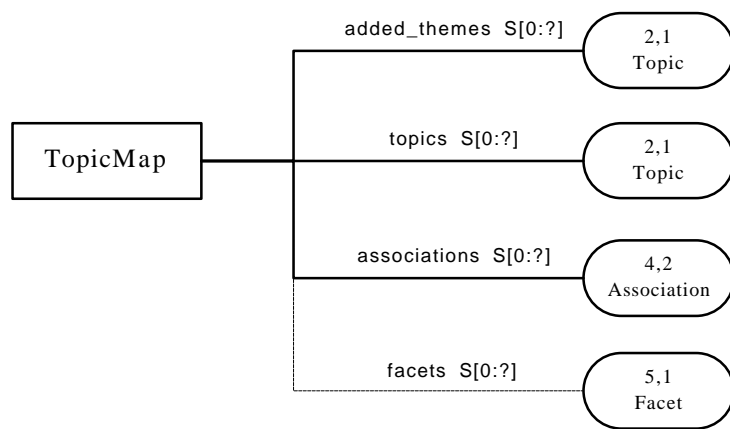
# TopicName

## EXPRESS specification:

```
*)
  ENTITY TopicName;
    basenames            :SET [1:?] OF BaseName;
    sortnames            :SET OF SortName;
    dispnames            :SET OF DisplayName;
    scopes               :SET OF Topic;
  END_ENTITY;
END_SCHEMA;
```

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# EXPRESS-G diagrams



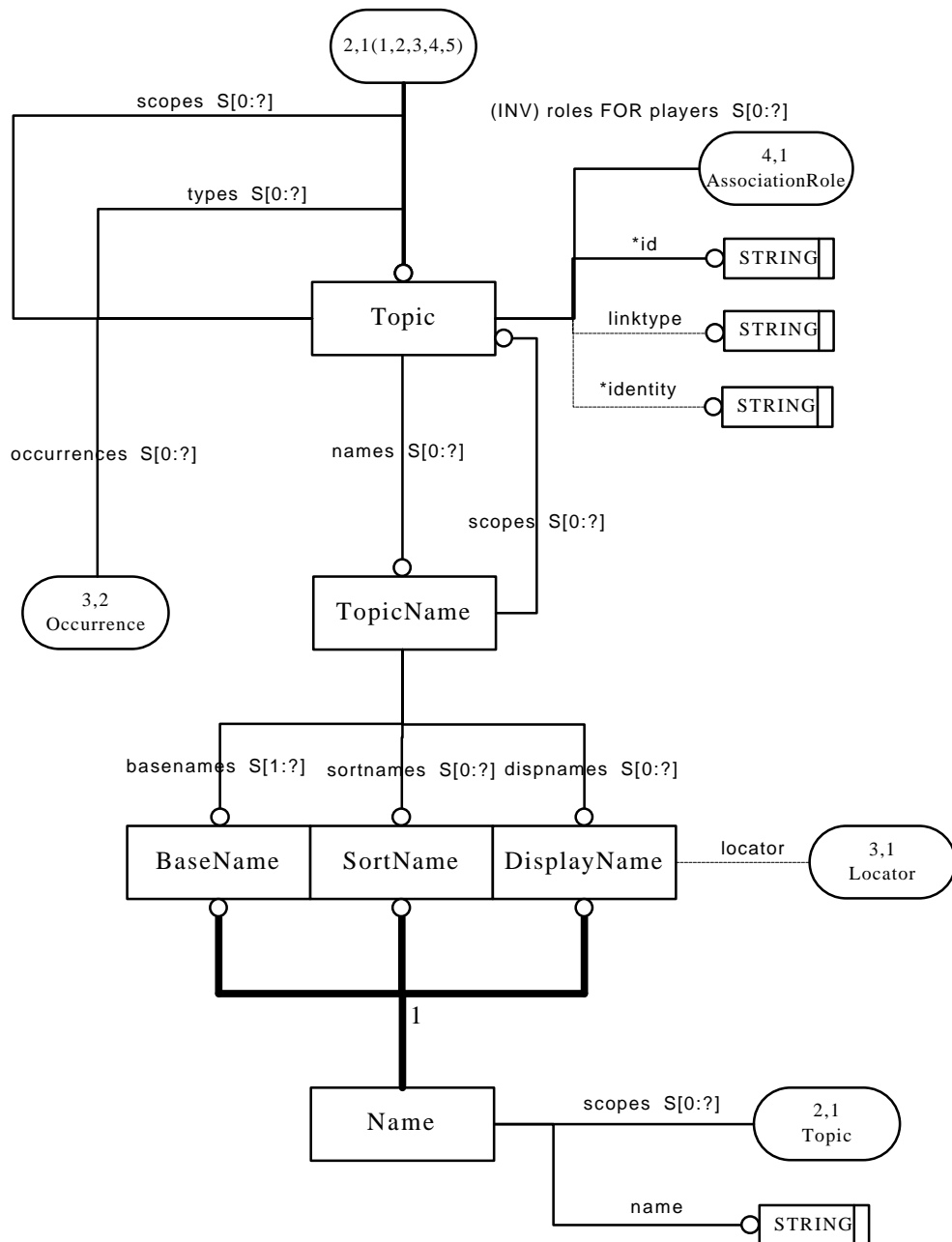


Figure D.2 - TOPICMAPS EXPRESS-G diagram 2 of 5

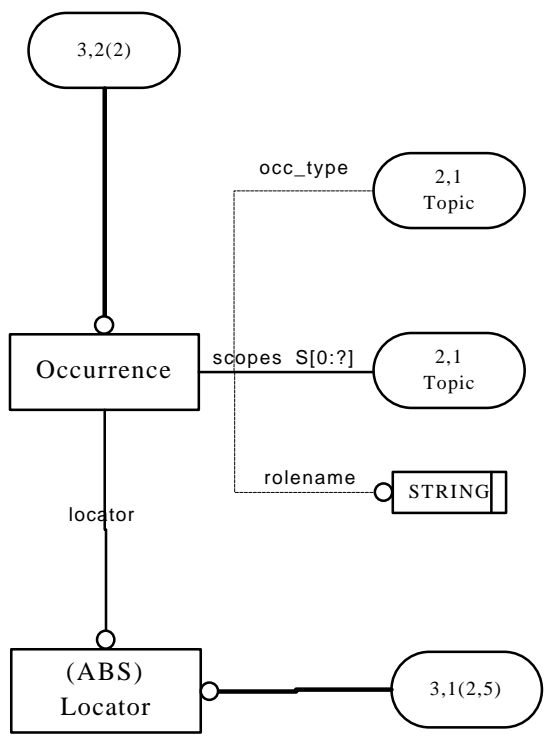


Figure D.3 - TOPICMAPS EXPRESS-G diagram 3 of 5



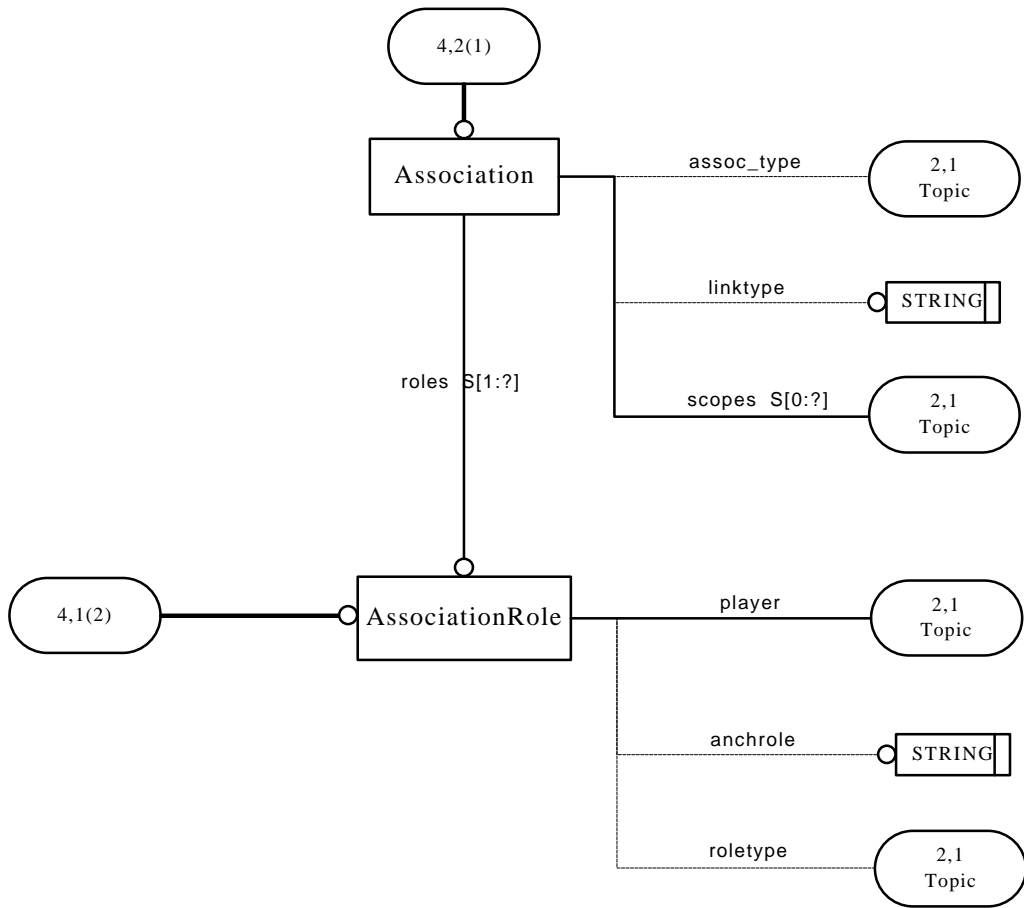


Figure D.4 - TOPICMAPS EXPRESS-G diagram 4 of 5

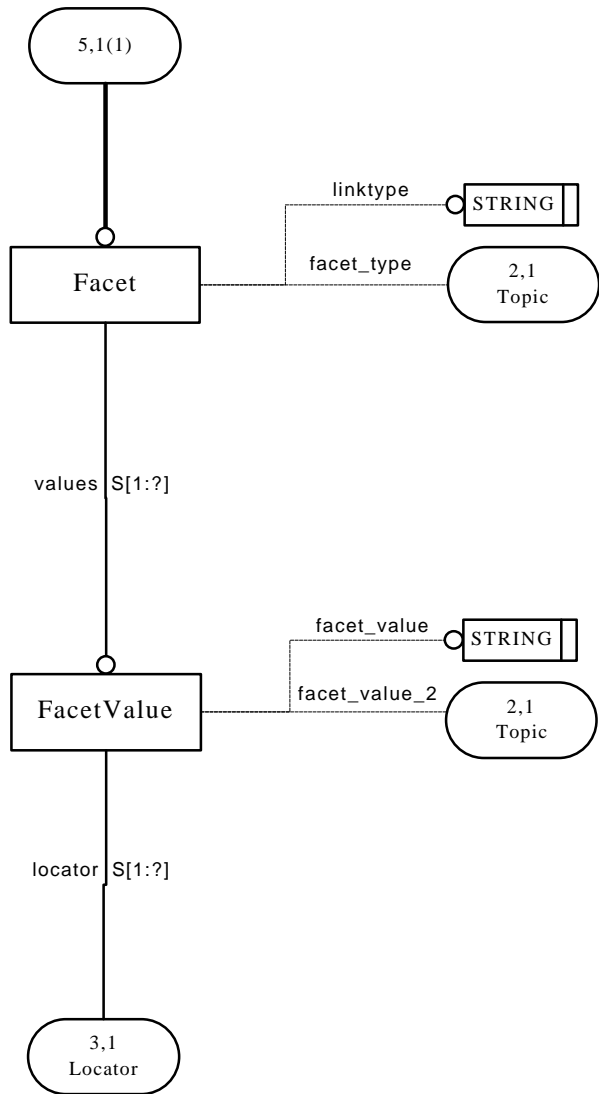


Figure D.5 - TOPICMAPS EXPRESS-G diagram 5 of 5  
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