



WS-Topics

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OASIS standard:

http://docs.oasis-open.org/wsn/wsn-ws_topics-1.3-spec-os.pdf

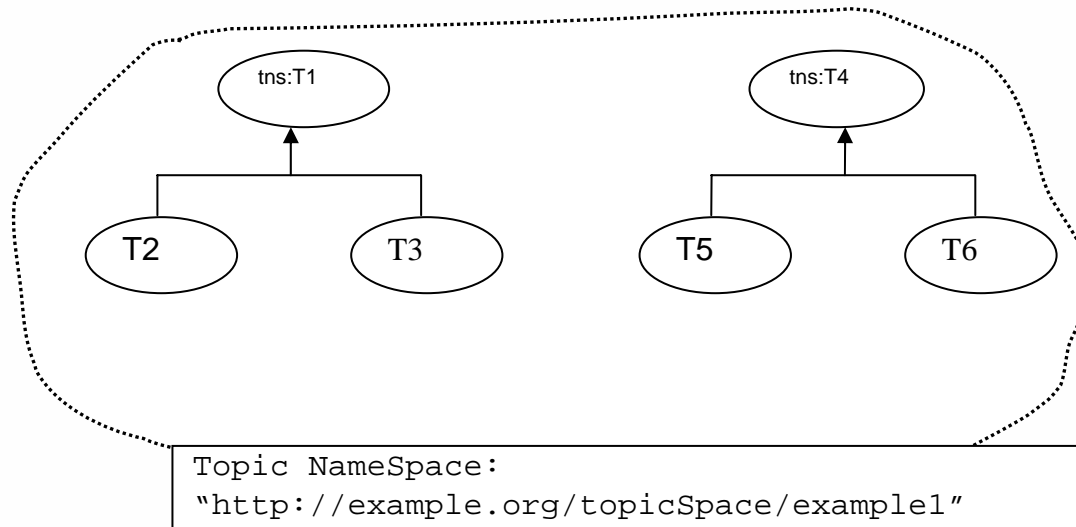
WS-Topics

- **Information space taxonomy**
 - **Mechanism to organize and categorize classes of events**
 - **NB A Topic (in this standard) is NOT a channel, stream, subscription or conduit for the event messages themselves**
 - **Topics have metadata, and a naming scheme. They are grouped into TopicNameSpaces**
- **XML document for describing topic metadata**
- **Expression languages used to identify topic(s)**
 - **Simple**
 - **ConcreteTopicPath**
 - **FullTopicPath**
 - **XPATH**

What are topics for?

- **Used by a subscriber to identify the subject area it wishes to cover in a subscription**
 - **A Producer delivers only delivers if notification if the list of topics associated with the subscription intersects with the list of topics associated with the event message**
- **Used to identify the set of subjects that a given Producer deals in**
 - **Useful information for a prospective publisher or subscriber**
 - **A producer may support only one topic**
- **Can be associated with metadata, e.g.**
 - **Notification message schema**
 - **Semantic information**
- **Could be used as part of an access control scheme**

Topic Hierarchies

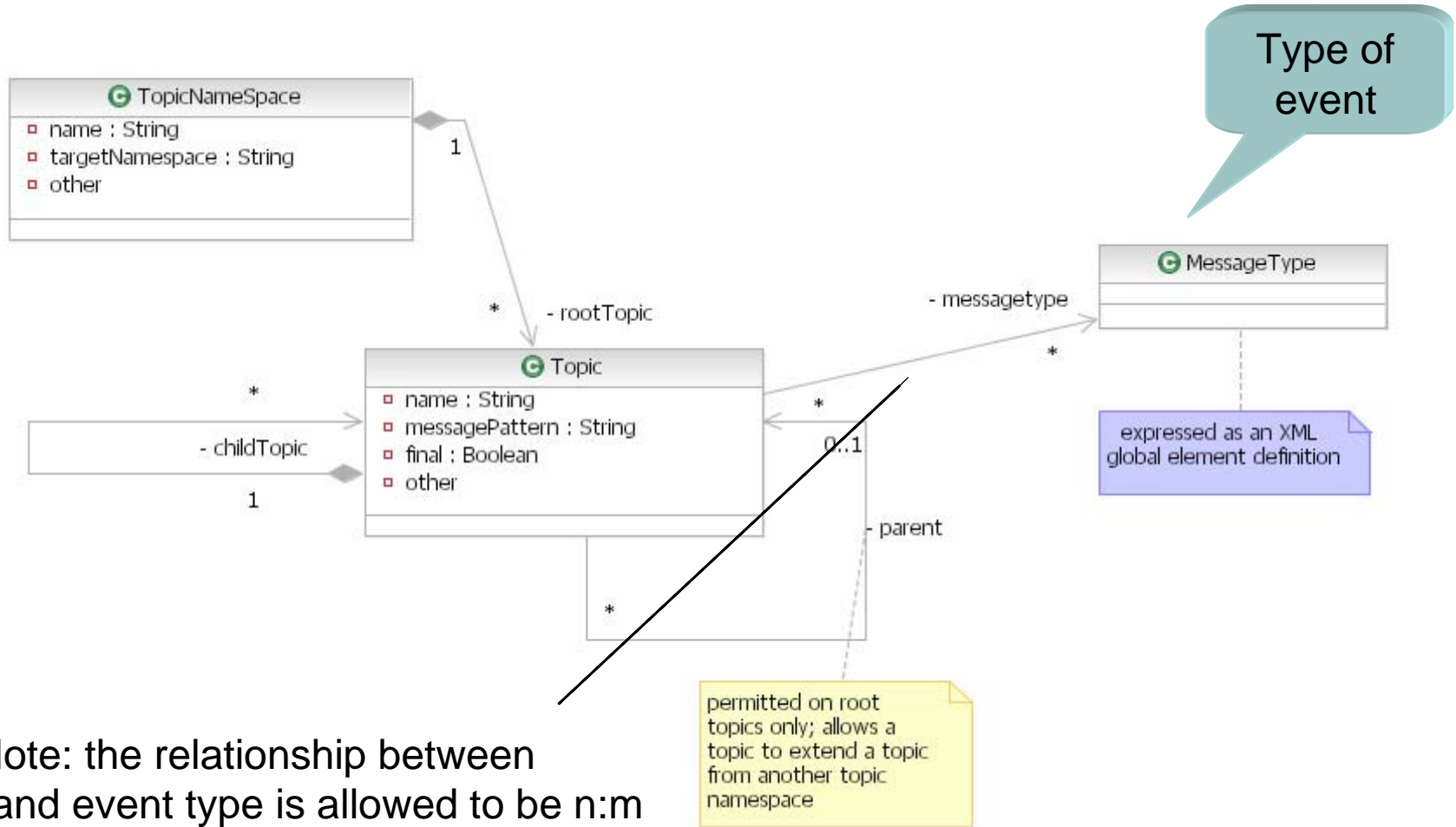


- Topics can be organised into hierarchies – each topic can have 0+ child topics
- Child topic names must be unique within each parent, to allow path-like names
 - Reasons for a hierarchy
 - Manageability (e.g. access control)
 - Simplifies multiple-topic selection (wildcarding)
 - Note: A child topic is a distinct topic from its parent
 - subscribing to a parent does not imply subscribing to its children

Topic Naming

- In order to avoid name collisions between different users, each Topic is assigned to an XML Namespace. The set of Topics in a given Namespace is called a **TopicNameSpace**.
- A producer can use its own unique TopicNameSpace (essentially its topic names are scoped to it), or it can share a TopicNameSpace with other producers
 - E.g. a TopicNameSpace containing topics specific to a particular application domain
 - A TopicNameSpace could be defined by a third party, such as a standards organisation.
- Topics can be named using simple QNames, or can have structured (hierarchical) names.
 - TopicNameSpace:TopicName
 - TopicNameSpace:Namepart1/Namepart2

WS-Topics Model

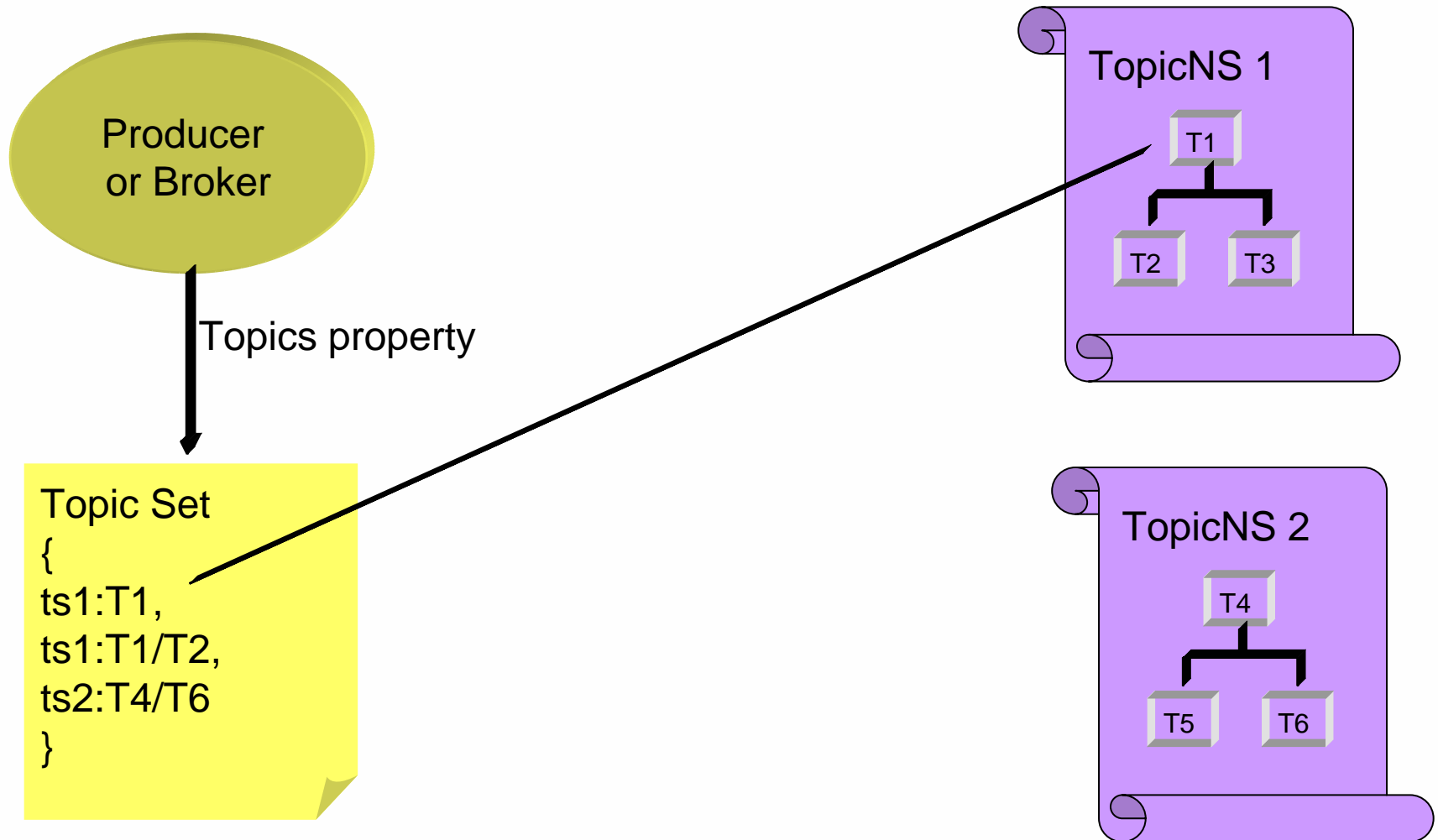


Note: the relationship between Topic and event type is allowed to be n:m
Designers can choose to use 1:1

TopicNameSpace document

```
<?xml version="1.0" encoding="UTF-8"?>
<wstop:topicSpace name="TopicSpaceExample1"
  targetNamespace="http://example.org/topicSpace/example1"
  xmlns:tns="http://example.org/topicSpace/example1"
  xmlns:xyz="http://example.org/anotherNamespace"
  xmlns:wstop="http://docs.oasis-open.org/wsn/t-1" >
  <wstop:topic name="t1">
    <wstop:topic name="t2" messageTypes="xyz:m1 tns:m2"/>
    <wstop:topic name="t3" messageTypes="xyz:m3"/>
  </wstop:topic>
  <wstop:topic name="t4">
    <wstop:topic name="t5" messageTypes="tns:m3"/>
    <wstop:topic name="t6"/>
  </wstop:topic>
</wstop:topicSpace>
```

Topic Sets and Topic NameSpaces



Topic Expressions

- **Simple**
 - QName
 - e.g. `tns:MyTopic`
 - Root topics only
- **ConcreteTopicPathExpression**
 - Path expression with a Namespace
 - e.g. `tns:/t1/t2/t3`
- **FullTopicPathExpression**
 - Path Expression with XPATH wildcarding, e.g.
 - `tns:t1/*` all children of t1
 - `tns:t1//*` all descendents of t1
 - `tns:t1//.` t1 + all its descendents

Topics Summary

- **Method of categorising Notifications**
 - Each Topic is associated with one or more MessageSchemas
 - Grouped into namespaces which have URIs
 - Topics may be defined by an individual publisher, or by a 3rd party (e.g. a standards organisation)
 - Allow a potential subscriber to understand the notification capabilities of a Publisher/Broker that is has just discovered.
 - Facilitate interoperation with Topic-based IT pub/sub systems (e.g. JMS)
 - Convenient attachment point for access control

- **Subscriber provides a TopicPathExpression to indicate Topic(s) of interest**
 - Matching on a Topic name is usually more efficient than matching against general message content.
 - Simple Topic Path Expression is just a single Topic Name
 - A simple NotificationSource may support only one Topic
 - More complex NotificationSources may permit wildcard expressions