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## **Representing the Dublin Core within X.500, LDAP and CLDAP**

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### Abstract

The Dublin Core is a simple resource description format which arose out of a loose grouping of "librarians, archivists, humanities scholars and geographers, as well as standards makers in the Internet, Z39.50 and Standard Generalized Markup Language (SGML) communities" [1].

This document describes a mapping from the abstract model of the Dublin Core to the X.500 [2], LDAP [3], and CLDAP [4] directory service protocols.

## **1. The Dublin Core in X.500, LDAP and CLDAP**

We propose that each of the thirteen elements of the Dublin Core be made into an X.500/[C]LDAP attribute, and that these attributes be gathered together in an object class:

Name:	dcObject
Description:	object containing the Dublin Core attributes
OID:	lutObjectClass.1 (1.3.6.1.4.1.1828.2.1)
SubclassOf:	top
MustContain:	
MayContain:	dcSubject, dcTitle, dcAuthor, dcPublisher, dcOtherAgent, dcDate, dcObjectType, dcForm, dcIdentifier, dcRelation, dcSource, dcLanguage, dcCoverage

Attribute definitions for the individual Dublin Core elements:

Name:	dcSubject
Description:	The topic addressed by the work
OID:	lutAttributeType.1 (1.3.6.1.4.1.1828.1.1)
Syntax:	DirectoryString
SizeRestriction:	None
SingleValued:	False

Name:	dcTitle
Description:	The name of the object
OID:	lutAttributeType.2 (1.3.6.1.4.1.1828.1.2)
Syntax:	DirectoryString
SizeRestriction:	None
SingleValued:	False

Name:	dcAuthor
Description:	The person(s) primarily responsible for the intellectual content of the object
OID:	lutAttributeType.3 (1.3.6.1.4.1.1828.1.3)
Syntax:	DirectoryString
SizeRestriction:	None
SingleValued:	False

Name:	dcPublisher
Description:	The agent or agency responsible for making the object available
OID:	lutAttributeType.4 (1.3.6.1.4.1.1828.1.4)
Syntax:	DirectoryString
SizeRestriction:	None
SingleValued:	False



Name: dcOtherAgent  
Description: The person(s), such as editors and transcribers, who have made other significant intellectual contributions to the work  
OID: lutAttributeType.5 (1.3.6.1.4.1.1828.1.5)  
Syntax: DirectoryString  
SizeRestriction: None  
SingleValued: False

Name: dcDate  
Description: The date of publication  
OID: lutAttributeType.6 (1.3.6.1.4.1.1828.1.6)  
Syntax: DirectoryString  
SizeRestriction: None  
SingleValued: False

Name: dcObjectType  
Description: The genre of the object, such as novel, poem, or dictionary  
OID: lutAttributeType.7 (1.3.6.1.4.1.1828.1.7)  
Syntax: DirectoryString  
SizeRestriction: None  
SingleValued: False

Name: dcForm  
Description: The physical manifestation of the object, such as Postscript file or Windows executable file  
OID: lutAttributeType.8 (1.3.6.1.4.1.1828.1.8)  
Syntax: DirectoryString  
SizeRestriction: None  
SingleValued: False

Name: dcIdentifier  
Description: String or number used to uniquely identify the object  
OID: lutAttributeType.9 (1.3.6.1.4.1.1828.1.9)  
Syntax: DirectoryString  
SizeRestriction: None  
SingleValued: False

Name: dcRelation  
Description: Relationship to other objects  
OID: lutAttributeType.10 (1.3.6.1.4.1.1828.1.10)  
Syntax: DirectoryString  
SizeRestriction: None  
SingleValued: False

Name: dcSource  
Description: Objects, either print or electronic, from which this



object is derived, if applicable

OID: lutAttributeType.11 (1.3.6.1.4.1.1828.1.11)  
 Syntax: DirectoryString  
 SizeRestriction: None  
 SingleValued: False

Name: dcLanguage  
 Description: Language of the intellectual content  
 OID: lutAttributeType.12 (1.3.6.1.4.1.1828.1.12)  
 Syntax: DirectoryString  
 SizeRestriction: None  
 SingleValued: False

Name: dcCoverage  
 Description: The spatial locations and temporal durations  
                   characteristic of the object  
 OID: lutAttributeType.13 (1.3.6.1.4.1.1828.1.13)  
 Syntax: DirectoryString  
 SizeRestriction: None  
 SingleValued: False

## 2. Examples and implementation considerations

For example, using Quipu [5] EDB notation, a Dublin Core "Title" element which had the value "Cities of The Red Night" would be represented as the attribute/value pair:

dcTitle= Cities of The Red Night

One aspect of the Dublin Core does not translate directly to X.500 and LDAP - each element may have additional qualifying "scheme" and "type" information attached to it. This gives the creator of the record a way of indicating additional semantics, e.g. the classification scheme being used in the "Subject" element.

Since X.500 and LDAP are, like most Internet based search and retrieval protocols, attribute/value oriented, it is necessary to find a place to put this extra information. We propose that, given the difficulty of incorporating this model within the X.500/LDAP paradigm, a simple but sub-optimal approach be taken - with any qualifying information being placed at the beginning of the value part of the attribute/value pair, delimited using round brackets, and with any additional qualifiers following using comma separation.

For example, if the subject classification for the above book were 813 in the Dewey Decimal system, the resulting Dublin Core record expressed as an X.500 EDB entry would look like this:



dcSubject= (scheme=DDC) 813

and a sample "Relation" element, with a "type" qualifier, would look like this:

dcRelation= (scheme=URI, type=isParentOf) <http://www.w3.org/>

### **3. Extensibility**

It is important to note that the Dublin Core element set is intended for use in describing document-like objects, and not as a means of describing arbitrary objects. Furthermore, the number of elements is strictly limited in the interests of interoperability.

Work is ongoing on the Warwick Framework [6], which attempts to provide a mechanism for packaging together collections of descriptive information. It is envisaged that this would be used in cases where the Dublin Core element set did not provide enough descriptive capability. This is a subject for further study.

### **4. Security considerations**

This proposal does not introduce any new security related issues.

One of the main uses to which the Dublin Core is expected to be put is in the generation of author supplied cataloguing information for on-line resources. Implementations which manipulate externally produced data should treat it with caution - for example, to avoid buffer overrun problems and unexpected evaluation of metacharacters.

### **5. Conclusions**

This document has shown how the X.500 protocol, and the related LDAP and CLDAP protocols, may be used as carriers for the abstract resource descriptions of the Dublin Core proposal.

It should be apparent that a little care is necessary when delivering this information via these protocols, but that this does not imply any great additional implementation complexity.

### **6. Acknowledgements**

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