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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 fifteen 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:       dcTitle, dcCreator, dcSubject, dcDescription,
                    dcPublisher, dcContributors, dcDate,
                    dcType, dcFormat, dcIdentifer, dcSource,
                    dcLanguage, dcRelation, dcCoverage, dcRights
```

Attribute definitions for the individual Dublin Core elements:

```
Name:             dcTitle
Description:      The name of the resource
OID:              lutAttributeType.1 (1.3.6.1.4.1.1828.1.1)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcCreator
Description:      The person(s) primarily responsible for the
                    intellectual content of the resource
OID:              lutAttributeType.2 (1.3.6.1.4.1.1828.1.2)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcSubject
Description:      The topic addressed by the resource, or a
                    set of appropriate keywords
OID:              lutAttributeType.3 (1.3.6.1.4.1.1828.1.3)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcDescription
Description:      A plain text description or abstract about
                    the resource.
OID:              lutAttributeType.4 (1.3.6.1.4.1.1828.1.4)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False
```

```
Name:             dcPublisher
Description:      The agent or agency responsible for making the
                    resource available
OID:              lutAttributeType.5 (1.3.6.1.4.1.1828.1.5)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcContributors
Description:      The person(s), such as editors and transcribers, who
                    have made other significant intellectual
                    contributions to the work
OID:              lutAttributeType.6 (1.3.6.1.4.1.1828.1.6)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcDate
Description:      The date of publication
OID:              lutAttributeType.7 (1.3.6.1.4.1.1828.1.7)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcType
Description:      The genre of the resource, such as novel, poem, or
                    dictionary
OID:              lutAttributeType.8 (1.3.6.1.4.1.1828.1.8)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcFormat
Description:      The physical manifestation of the resource, such as
                    Postscript file or Windows executable file
OID:              lutAttributeType.9 (1.3.6.1.4.1.1828.1.9)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcIdentifier
Description:      String or number used to uniquely identify the
                    resource
OID:              lutAttributeType.10 (1.3.6.1.4.1.1828.1.10)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False
```

```
Name:             dcSource
Description:      Resources, either print or electronic, from which
                    this resource 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:             dcRelation
Description:      Relationship to other resources
OID:              lutAttributeType.13 (1.3.6.1.4.1.1828.1.13)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcCoverage
Description:      The spatial locations and temporal durations
                    characteristic of the resource
OID:              lutAttributeType.14 (1.3.6.1.4.1.1828.1.14)
Syntax:           DirectoryString
SizeRestriction:  None
SingleValued:     False

Name:             dcRights
Description:      Information concerning the intellectual property
                    rights that are being exercised over the
                    resource (including access terms)
OID:              lutAttributeType.15 (1.3.6.1.4.1.1828.1.15)
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 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
```

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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7. References

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