4DOS/4NT Description file extensions proposal

Field name	
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Table of Contents

Version	Description of changes
2004-09-14	Added history of changes table. Set document status to released.
2004-11-21	Clarification of fields.
2006-12-23	Added new external metadata fields and update example for multi-language support

1 Introduction

This documents the proposal for general metadata storage information in 4NT/4DOS or `_DName/descript.ion` files. These extensions permit storage of general metadata information that conform to known standards and which are easily accessible.

For more information on the file format of 4DOS Description files., please refer to http://www.jpsoft.com/ascii/descfile.txt.

For simplicity's sake, the actual extension is based on Adobe's Extensible Metadata Platform (XMP). This format is easily editable viewable and editable in a text editor, and it supports the dublincore standard, as well as making it easy to extend the format with new properties.

2 Character encoding

The basic description file format is composed of ASCII text (according to ISO 646 US). This limitation does not permit us to have international text in the actual description file. For our purposes international support is a requirement; therefore all encoding of proprietary data is done according to the UTF-8 format.

3 Fields of the description file

3.1 Standard field (title field)

The standard field is the field which is the one used to store standard description information using 4DOS and 4NT. This field is uniquely composed of characters represented in the current ISO 646-US (ASCII) 7-bit encoding scheme. For more information on this field, refer to JPSoft documents.

For greater usability and to permit easy integration in shells (The 4NT/4DOS shell displays this field when listing files and directories), software should fill this field with the `dc:title` (with the `lang` attribute `x-default`) property value found in the XMP field. Due to character encoding restrictions,the XMP title property should first be converted to the ISO 646-US character set before being stored in this field.

3.2 XMP field

This field contains a simplified XMP block (stored as an RDF block) which is not in a packet block (since we do not wish to cause mismatches when working by searching a file system), nor does it contain the `x:xmpmeta` block. The encoding, as defined by the standard, is in XML.

Usually the XMP properties that shall be stored in these blocks should conform to external properties (as defined by XMP). It is not recommended adding internal properties (except for `xmp:MetadataDate`), since they are usually stored in the files themselves. Adding the `xmp:MetadataDate` property field is **strongly recomnmended**. This property makes it easier to synchronize the metadata and the data within the file that is described.

Alternate languages are also supported, as defined in the XMP Standard.

The XMP identifier byte is the character 0x10 (as defined in the 4DOS/4NT Descript.ion file standard).

As defined in the official specification of Descript.ion files, the total size of a single entry (including the filename, the 4DOS standard field, and this XMP block is limited to 4096 characters).

Sample properties that can be stored in this XMP field:

Name	*XMP Property name*	*Description*
Extended title field	dc:title	Shall contain the title field, as above, except that is shall be encoded in UTF-8 format. This field can be composed Language Alternative RDF elements since there can be titles in several different languages.

Name	*XMP Property name*	*Description*
Creator field	dc:creator	This field shall contain the name of the entity primarily responsible for making the content of the resource. If more than one creator is present, this element will be an RDF ordered array.
Unique identifier field	dc:identifier	An unambiguous reference to the resource within a given context.
Keywords field	dc:subject	A topic of the content of the resource. If more than one subject is present, this element will be an RDF unordered array.
Derived source	dc:source	This can be the name of an album, or other work this resource is derived or taken from.
Associated date	dc:date	This indicates a date associated with the original resource, for example the original date the work was first published, the musical album publish date, etc. If there is more than one date, this will be encoded as an RDF Ordered Array.
Summary field	dc:description	An account of the content of the resource. This field can be composed Language Alternative RDF elements since there can be descriptions in several different languages.
Metadata date	xmp:MetadataDate	The date when this XMP block was last modified and edited.
CRC-32 of resource	dex:crc32	Contains the CRC-32 of the resource as an unsigned 32-bit integer.
File format identifier (FFID)	dex:ffid	This is the unique file format identifier associated with this file format. This should be exactly 20 characters in length
MIME Format	dc:format	Contains the MIME Type identifier (As specified by IETF)

4 Sample file

Here is a dump of a sample Descript.ion file:

```
000000: 41 54 49 43 4E 54 4C 2E  44 4C 4C 20 41 54 49 20  ATICNTL.DLL ATI
000010: 43 75 73 74 6F 6D 20 43  6F 6E 74 72 6F 6C 20 4C  Custom Control L
000020: 69 62 72 61 72 79 2C 20  28 63 29 31 39 39 34 20  ibrary, (c)1994
000030: 41 54 49 20 54 65 63 68  6E 6F 6C 6F 67 69 65 73  ATI Technologies
000040: 20 49 6E 63 2E 04 10 3C  72 64 66 3A 52 44 46 20   Inc...<rdf:RDF
000050: 78 6D 6C 6E 73 3A 72 64  66 3D 22 68 74 74 70 3A  xmlns:rdf="http:
000060: 2F 2F 77 77 77 2E 77 33  2E 6F 72 67 2F 31 39 39  //www.w3.org/199
000070: 39 2F 30 32 2F 32 32 2D  72 64 66 2D 73 79 6E 74  9/02/22-rdf-synt
000080: 61 78 2D 6E 73 23 22 3E  3C 72 64 66 3A 44 65 73  ax-ns#"><rdf:Des
000090: 63 72 69 70 74 69 6F 6E  20 61 62 6F 75 74 3D 22  cription about="
0000A0: 22 20 78 6D 6C 6E 73 3A  64 63 3D 22 68 74 74 70  " xmlns:dc="http
0000B0: 3A 2F 2F 70 75 72 6C 2E  6F 72 67 2F 64 63 2F 65  ://purl.org/dc/e
0000C0: 6C 65 6D 65 6E 74 73 2F  31 2E 31 2F 22 3E 3C 64  lements/1.1/"><d
0000D0: 63 3A 74 69 74 6C 65 3E  3C 72 64 66 3A 41 6C 74  c:title><rdf:Alt
0000E0: 3E 3C 72 64 66 3A 6C 69  20 78 6D 6C 3A 6C 61 6E  ><rdf:li xml:lan
0000F0: 67 3D 22 78 2D 64 65 66  61 75 6C 74 22 3E 41 54  g="x-default">AT
000100: 49 20 43 75 73 74 6F 6D  20 43 6F 6E 74 72 6F 6C  I Custom Control
000110: 20 4C 69 62 72 61 72 79  2C 20 28 63 29 31 39 39   Library, (c)199
000120: 34 20 41 54 49 20 54 65  63 68 6E 6F 6C 6F 67 69  4 ATI Technologi
000130: 65 73 20 49 6E 63 2E 3C  2F 72 64 66 3A 6C 69 3E  es Inc.</rdf:li>
000140: 3C 2F 72 64 66 3A 41 6C  74 3E 3C 2F 64 63 3A 74  </rdf:Alt></dc:t
000150: 69 74 6C 65 3E 3C 64 63  3A 64 65 73 63 72 69 70  itle><dc:descrip
000160: 74 69 6F 6E 3E 3C 72 64  66 3A 41 6C 74 3E 3C 72  tion><rdf:Alt><r
```

```
000170: 64 66 3A 6C 69 20 78 6D  6C 3A 6C 61 6E 67 3D 22   df:li xml:lang="
000180: 78 2D 64 65 66 61 75 6C  74 22 3E 41 54 49 20 43   x-default">ATI C
000190: 75 73 74 6F 6D 20 43 6F  6E 74 72 6F 6C 73 3C 2F   ustom Controls</
0001A0: 72 64 66 3A 6C 69 3E 3C  2F 72 64 66 3A 41 6C 74   rdf:li></rdf:Alt
0001B0: 3E 3C 2F 64 63 3A 64 65  73 63 72 69 70 74 69 6F   ></dc:descriptio
0001C0: 6E 3E 3C 64 63 3A 63 72  65 61 74 6F 72 3E 3C 72   n><dc:creator><r
0001D0: 64 66 3A 53 65 71 3E 3C  72 64 66 3A 6C 69 3E 41   df:Seq><rdf:li>A
0001E0: 54 49 20 54 65 63 68 6E  6F 6C 6F 67 69 65 73 3C   TI Technologies<
0001F0: 2F 72 64 66 3A 6C 69 3E  3C 2F 72 64 66 3A 53 65   /rdf:li></rdf:Se
000200: 71 3E 3C 2F 64 63 3A 63  72 65 61 74 6F 72 3E 3C   q></dc:creator><
000210: 2F 72 64 66 3A 44 65 73  63 72 69 70 74 69 6F 6E   /rdf:Description
000220: 3E 3C 72 64 66 3A 44 65  73 63 72 69 70 74 69 6F   ><rdf:Descriptio
000230: 6E 20 61 62 6F 75 74 3D  22 22 20 78 6D 6C 6E 73   n about="" xmlns
000240: 3A 78 6D 70 3D 22 68 74  74 70 3A 2F 2F 6E 73 2E   :xmp="http://ns.
000250: 61 64 6F 62 65 2E 63 6F  6D 2F 78 61 70 2F 31 2E   adobe.com/xap/1.
000260: 30 2F 22 3E 3C 78 6D 70  3A 4D 65 74 61 64 61 74   0/"><xmp:Metadat
000270: 61 44 61 74 65 3E 32 30  30 36 2D 31 32 2D 32 33   aDate>2006-12-23
000280: 3C 2F 78 6D 70 3A 4D 65  74 61 64 61 74 61 44 61   </xmp:MetadataDa
000290: 74 65 3E 3C 2F 72 64 66  3A 44 65 73 63 72 69 70   te></rdf:Descrip
0002A0: 74 69 6F 6E 3E 3C 72 64  66 3A 44 65 73 63 72 69   tion><rdf:Descri
0002B0: 70 74 69 6F 6E 20 61 62  6F 75 74 3D 22 22 20 78   ption about="" x
0002C0: 6D 6C 6E 73 3A 64 65 78  3D 22 68 74 74 70 3A 2F   mlns:dex="http:/
0002D0: 2F 6E 73 2E 6F 70 74 69  6D 61 73 63 2E 63 6F 6D   /ns.optimasc.com
0002E0: 2F 64 65 78 2F 31 2E 30  2F 22 3E 3C 64 65 78 3A   /dex/1.0/"><dex:
0002F0: 66 66 69 64 3E 30 30 30  30 30 31 30 30 31 2D 31   ffid>000001001-1
000300: 33 2D 30 30 30 30 30 30  30 3C 2F 64 65 78 3A 66   3-0000000</dex:f
000310: 66 69 64 3E 3C 2F 72 64  66 3A 44 65 73 63 72 69   fid></rdf:Descri
000320: 70 74 69 6F 6E 3E 3C 2F  72 64 66 3A 52 44 46 3E   ption></rdf:RDF>
000330: 0D 0A 41 54 49 50 52 4F  46 2E 45 58 45 20 41 54   ..ATIPROF.EXE AT
000340: 49 50 52 4F 46 2E 45 58  45 04 10 3C 72 64 66 3A   IPROF.EXE..<rdf:
000350: 52 44 46 20 78 6D 6C 6E  73 3A 72 64 66 3D 22 68   RDF xmlns:rdf="h
000360: 74 74 70 3A 2F 2F 77 77  77 2E 77 33 2E 6F 72 67   ttp://www.w3.org
000370: 2F 31 39 39 39 2F 30 32  2F 32 32 2D 72 64 66 2D   /1999/02/22-rdf-
000380: 73 79 6E 74 61 78 2D 6E  73 23 22 3E 3C 72 64 66   syntax-ns#"><rdf
000390: 3A 44 65 73 63 72 69 70  74 69 6F 6E 20 61 62 6F   :Description abo
0003A0: 75 74 3D 22 22 20 78 6D  6C 6E 73 3A 64 63 3D 22   ut="" xmlns:dc="
0003B0: 68 74 74 70 3A 2F 2F 70  75 72 6C 2E 6F 72 67 2F   http://purl.org/
0003C0: 64 63 2F 65 6C 65 6D 65  6E 74 73 2F 31 2E 31 2F   dc/elements/1.1/
0003D0: 22 3E 3C 64 63 3A 74 69  74 6C 65 3E 3C 72 64 66   "><dc:title><rdf
0003E0: 3A 41 6C 74 3E 3C 72 64  66 3A 6C 69 20 78 6D 6C   :Alt><rdf:li xml
0003F0: 3A 6C 61 6E 67 3D 22 78  2D 64 65 66 61 75 6C 74   :lang="x-default
000400: 22 3E 41 54 49 50 52 4F  46 2E 45 58 45 3C 2F 72   ">ATIPROF.EXE</r
000410: 64 66 3A 6C 69 3E 3C 2F  72 64 66 3A 41 6C 74 3E   df:li></rdf:Alt>
000420: 3C 2F 64 63 3A 74 69 74  6C 65 3E 3C 64 63 3A 64   </dc:title><dc:d
000430: 65 73 63 72 69 70 74 69  6F 6E 3E 3C 72 64 66 3A   escription><rdf:
000440: 41 6C 74 3E 3C 72 64 66  3A 6C 69 20 78 6D 6C 3A   Alt><rdf:li xml:
000450: 6C 61 6E 67 3D 22 78 2D  64 65 66 61 75 6C 74 22   lang="x-default"
000460: 3E 41 54 49 20 44 49 42  20 44 72 61 77 20 50 72   >ATI DIB Draw Pr
000470: 6F 66 69 6C 65 72 3C 2F  72 64 66 3A 6C 69 3E 3C   ofiler</rdf:li><
000480: 2F 72 64 66 3A 41 6C 74  3E 3C 2F 64 63 3A 64 65   /rdf:Alt></dc:de
000490: 73 63 72 69 70 74 69 6F  6E 3E 3C 64 63 3A 63 72   scription><dc:cr
0004A0: 65 61 74 6F 72 3E 3C 72  64 66 3A 53 65 71 3E 3C   eator><rdf:Seq><
0004B0: 72 64 66 3A 6C 69 3E 41  54 49 20 54 65 63 68 6E   rdf:li>ATI Techn
0004C0: 6F 6C 6F 67 69 65 73 3C  2F 72 64 66 3A 6C 69 3E   ologies</rdf:li>
0004D0: 3C 72 64 66 3A 6C 69 3E  49 6E 63 2E 3C 2F 72 64   <rdf:li>Inc.</rd
0004E0: 66 3A 6C 69 3E 3C 2F 72  64 66 3A 53 65 71 3E 3C   f:li></rdf:Seq><
0004F0: 2F 64 63 3A 63 72 65 61  74 6F 72 3E 3C 2F 72 64   /dc:creator></rd
000500: 66 3A 44 65 73 63 72 69  70 74 69 6F 6E 3E 3C 72   f:Description><r
000510: 64 66 3A 44 65 73 63 72  69 70 74 69 6F 6E 20 61   df:Description a
000520: 62 6F 75 74 3D 22 22 20  78 6D 6C 6E 73 3A 78 6D   bout="" xmlns:xm
000530: 70 3D 22 68 74 74 70 3A  2F 2F 6E 73 2E 61 64 6F   p="http://ns.ado
000540: 62 65 2E 63 6F 6D 2F 78  61 70 2F 31 2E 30 2F 22   be.com/xap/1.0/"
```

```
000550: 3E 3C 78 6D 70 3A 4D 65   74 61 64 61 74 61 44 61  ><xmp:MetadataDa
000560: 74 65 3E 32 30 30 36 2D   31 32 2D 32 33 3C 2F 78  te>2006-12-23</x
000570: 6D 70 3A 4D 65 74 61 64   61 74 61 44 61 74 65 3E  mp:MetadataDate>
000580: 3C 2F 72 64 66 3A 44 65   73 63 72 69 70 74 69 6F  </rdf:Descriptio
000590: 6E 3E 3C 72 64 66 3A 44   65 73 63 72 69 70 74 69  n><rdf:Descripti
0005A0: 6F 6E 20 61 62 6F 75 74   3D 22 22 20 78 6D 6C 6E  on about="" xmln
0005B0: 73 3A 64 65 78 3D 22 68   74 74 70 3A 2F 2F 6E 73  s:dex="http://ns
0005C0: 2E 6F 70 74 69 6D 61 73   63 2E 63 6F 6D 2F 64 65  .optimasc.com/de
0005D0: 78 2F 31 2E 30 2F 22 3E   3C 64 65 78 3A 66 66 69  x/1.0/"><dex:ffi
0005E0: 64 3E 30 30 30 30 30 31   30 30 31 2D 31 32 2D 30  d>000001001-12-0
0005F0: 30 30 30 30 30 30 3C 2F   64 65 78 3A 66 66 69 64  000000</dex:ffid
000600: 3E 3C 2F 72 64 66 3A 44   65 73 63 72 69 70 74 69  ></rdf:Descripti
000610: 6F 6E 3E 3C 2F 72 64 66   3A 52 44 46 3E 0D 0A 57  on></rdf:RDF>..**W
000620: 49 4E 48 45 4C 50 2E 45   58 45 20 4D 69 63 72 6F  INHELP.EXE** Micro
000630: 73 6F 66 74 20 48 65 6C   70 20 33 2E 31 04 10 3C  soft Help 3.1..<
000640: 72 64 66 3A 52 44 46 20   78 6D 6C 6E 73 3A 72 64  rdf:RDF xmlns:rd
000650: 66 3D 22 68 74 74 70 3A   2F 2F 77 77 77 2E 77 33  f="http://www.w3
000660: 2E 6F 72 67 2F 31 39 39   39 2F 30 32 2F 32 32 2D  .org/1999/02/22-
000670: 72 64 66 2D 73 79 6E 74   61 78 2D 6E 73 23 22 3E  rdf-syntax-ns#">
000680: 3C 72 64 66 3A 44 65 73   63 72 69 70 74 69 6F 6E  <rdf:Description
000690: 20 61 62 6F 75 74 3D 22   22 20 78 6D 6C 6E 73 3A   about="" xmlns:
0006A0: 64 63 3D 22 68 74 74 70   3A 2F 2F 70 75 72 6C 2E  dc="http://purl.
0006B0: 6F 72 67 2F 64 63 2F 65   6C 65 6D 65 6E 74 73 2F  org/dc/elements/
0006C0: 31 2E 31 2F 22 3E 3C 64   63 3A 74 69 74 6C 65 3E  1.1/"><dc:title>
0006D0: 3C 72 64 66 3A 41 6C 74   3E 3C 72 64 66 3A 6C 69  <rdf:Alt><rdf:li
0006E0: 20 78 6D 6C 3A 6C 61 6E   67 3D 22 78 2D 64 65 66   xml:lang="x-def
0006F0: 61 75 6C 74 22 3E 4D 69   63 72 6F 73 6F 66 74 20  ault">Microsoft
000700: 48 65 6C 70 20 33 2E 31   3C 2F 72 64 66 3A 6C 69  Help 3.1</rdf:li
000710: 3E 3C 2F 72 64 66 3A 41   6C 74 3E 3C 2F 64 63 3A  ></rdf:Alt></dc:
000720: 74 69 74 6C 65 3E 3C 64   63 3A 64 65 73 63 72 69  title><dc:descri
000730: 70 74 69 6F 6E 3E 3C 72   64 66 3A 41 6C 74 3E 3C  ption><rdf:Alt><
000740: 72 64 66 3A 6C 69 20 78   6D 6C 3A 6C 61 6E 67 3D  rdf:li xml:lang=
000750: 22 78 2D 64 65 66 61 75   6C 74 22 3E 57 69 6E 64  "x-default">Wind
000760: 6F 77 73 20 48 65 6C 70   20 45 6E 67 69 6E 65 20  ows Help Engine
000770: 61 70 70 6C 69 63 61 74   69 6F 6E 20 66 69 6C 65  application file
000780: 3C 2F 72 64 66 3A 6C 69   3E 3C 2F 72 64 66 3A 41  </rdf:li></rdf:A
000790: 6C 74 3E 3C 2F 64 63 3A   64 65 73 63 72 69 70 74  lt></dc:descript
0007A0: 69 6F 6E 3E 3C 64 63 3A   63 72 65 61 74 6F 72 3E  ion><dc:creator>
0007B0: 3C 72 64 66 3A 53 65 71   3E 3C 72 64 66 3A 6C 69  <rdf:Seq><rdf:li
0007C0: 3E 4D 69 63 72 6F 73 6F   66 74 20 43 6F 72 70 6F  >Microsoft Corpo
0007D0: 72 61 74 69 6F 6E 3C 2F   72 64 66 3A 6C 69 3E 3C  ration</rdf:li><
0007E0: 2F 72 64 66 3A 53 65 71   3E 3C 2F 64 63 3A 63 72  /rdf:Seq></dc:cr
0007F0: 65 61 74 6F 72 3E 3C 2F   72 64 66 3A 44 65 73 63  eator></rdf:Desc
000800: 72 69 70 74 69 6F 6E 3E   3C 72 64 66 3A 44 65 73  ription><rdf:Des
000810: 63 72 69 70 74 69 6F 6E   20 61 62 6F 75 74 3D 22  cription about="
000820: 22 20 78 6D 6C 6E 73 3A   78 6D 70 3D 22 68 74 74  " xmlns:xmp="htt
000830: 70 3A 2F 2F 6E 73 2E 61   64 6F 62 65 2E 63 6F 6D  p://ns.adobe.com
000840: 2F 78 61 70 2F 31 2E 30   2F 22 3E 3C 78 6D 70 3A  /xap/1.0/"><xmp:
000850: 4D 65 74 61 64 61 74 61   44 61 74 65 3E 32 30 30  MetadataDate>200
000860: 36 2D 31 32 2D 32 33 3C   2F 78 6D 70 3A 4D 65 74  6-12-23</xmp:Met
000870: 61 64 61 74 61 44 61 74   65 3E 3C 2F 72 64 66 3A  adataDate></rdf:
000880: 44 65 73 63 72 69 70 74   69 6F 6E 3E 3C 72 64 66  Description><rdf
000890: 3A 44 65 73 63 72 69 70   74 69 6F 6E 20 61 62 6F  :Description abo
0008A0: 75 74 3D 22 22 20 78 6D   6C 6E 73 3A 64 65 78 3D  ut="" xmlns:dex=
0008B0: 22 68 74 74 70 3A 2F 2F   6E 73 2E 6F 70 74 69 6D  "http://ns.optim
0008C0: 61 73 63 2E 63 6F 6D 2F   64 65 78 2F 31 2E 30 2F  asc.com/dex/1.0/
0008D0: 22 3E 3C 64 65 78 3A 66   66 69 64 3E 30 30 30 30  "><dex:ffid>0000
0008E0: 30 31 30 30 31 2D 31 32   2D 30 30 30 30 30 30 30  01001-12-0000000
0008F0: 3C 2F 64 65 78 3A 66 66   69 64 3E 3C 2F 72 64 66  </dex:ffid></rdf
000900: 3A 44 65 73 63 72 69 70   74 69 6F 6E 3E 3C 2F 72  :Description></r
000910: 64 66 3A 52 44 46 3E 0D   0A 00 00 00 00 00 00 00  df:RDF>.........
```

As can be seen in the above dump file, this description file contains information for three files (The filenames are shown in boldface). This is followed by the standard description (as defined by JPSoft). Following this, the Ctrl-D character indicates (0x04) that the 4DOS/4NT specific information has ended, and proprietary information follows (identified by the identification character 0x10).

The actual XMP block is simply an RDF block in XML syntax, without the headers prescribed by Adobe. The namespace attribute can be used to determine that this is actually an XMP field.

5 Bibliography

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[4] *Dublincore Consortium*. Dublin Core Metadata Element Set, Version 1.1: Reference Description, Available from <http://www.dublincore.org/documents/dces/>