

### Digital Preservation Support Levels

<b>Support level 1:</b> All reasonable actions to maintain usability will be taken. Actions may include migration, normalization or conversion.			
<b>Support level 2:</b> Limited steps to maintain usability will be taken. File formats may be actively transformed from one format to another to mitigate format obsolescence.			
<b>Support level 3:</b> Only access to the object in its submission file format is provided.			
<i>Format</i>	<i>File extension</i>	<i>Support Level</i>	<i>Remarks</i>
<b>Text file formats</b>			
HTML	.html, .htm	Level 2	
Microsoft Word	.doc	Level 3	
PDF (PDF/1)	.pdf	Level 1	Adobe's Portable Document Format (open since 2008), but the specification allows some proprietary extensions
Postscript	.ps, .eps	Level 2	Is a computer language for creating vector graphics
Rich Text	.rtf	Level 2	Proprietary, published specification, defined and maintained only by Microsoft
Plain Text UTF-8 (unicode)	.txt	Level 1	
SGML w/DTD	.sgm, .sgml	Level 1	Standard Generalized Markup Language (SGML, ISO 8879:1986) is a platform independent ISO standard for the syntax of markup languages. With DTD's one can make a subset of SGML for a specific purpose.
SGML w/o DTD	.sgm, .sgml	Level 3	
XML w/DTD	.xml	Level 1	Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.
XML w/o DTD	.xml	Level 3	
Wordperfect	.wpd	Level 3	
OpenDocument Text	.odt	Level 2	
<b>Image file formats</b>			
BMP/Bitmap	.bmp	Level 3	The BMP file format (Windows bitmap) handles graphics files within the Microsoft Windows OS. Typically, BMP files are uncompressed, hence they are large; the advantage is their simplicity and wide acceptance in Windows programs.

GIF	.gif	Level 3	GIF (Graphics Interchange Format)
JPEG	.jpg	Level 1	JPEG (Joint Photographic Experts Group) is a lossy compression method; JPEG-compressed images are usually stored in the JFIF (JPEG File Interchange Format) file format.
JPEG 2000	.jp2	Level 2	JPEG 2000 is a compression standard enabling both lossless and lossy storage. The compression methods used are different from the ones in standard JFIF/JPEG; they improve quality and compression ratios, but also require more computational power to process. JPEG 2000 also adds features that are missing in JPEG.
PNG	.png	Level 2	The PNG (Portable Network Graphics) file format was created as the free, open-source successor to GIF.
Photoshop	.psd	Level 3	Photoshop files have default file extension as .PSD, which stands for "Photoshop Document." A PSD file stores an image with support for most imaging options available in Photoshop.
TIFF	.tif	Level 1	The Tagged Image File Format (TIFF) is a computer file format for storing raster graphics images, popular among graphic artists, the publishing industry,[1] and both amateur and professional photographers in general. The format was originally created by the company Aldus[2] for use in desktop publishing, but as of 2009, it is under the control of Adobe Systems.
<b>Presentation</b>			
Microsoft PowerPoint	.ppt	Level 3	
OpenDocument Presentation	.odp	level 2	
OOXML	.pptx	level 2	Office Open XML (OOXML) is an open file format for Office documents. The standard was developed by Ecma International and ISO/IEC and is based on a format developed by Microsoft for Office 12 and transferred to Ecma during development.
<b>Video file formats</b>			
AVI	.avi	Level 2	Audio Video Interleaved (also Audio Video Interleave), known by its initials AVI, is a multimedia container format introduced by Microsoft in November 1992 as part of its Video for Windows technology. AVI files can contain both audio and video data in a file container that allows synchronous audio-with-video playback.

MPEG-1	.mp1	Level 2	<p>MPEG-1 is a standard for lossy compression of video and audio. It is designed to compress VHS-quality raw digital video and CD audio down to 1.5 Mbit/s (26:1 and 6:1 compression ratios respectively)[1] without excessive quality loss, making video CDs, digital cable/satellite TV and digital audio broadcasting (DAB) possible.[2][3]</p> <p>Today, MPEG-1 has become the most widely compatible lossy audio/video format in the world, and is used in a large number of products and technologies. Perhaps the best-known part of the MPEG-1 standard is the MP3 audio format it introduced.</p>
MPEG-2	.mp2	Level 2	<p>MPEG-2 is widely used as the format of digital television signals that are broadcast by terrestrial (over-the-air), cable, and direct broadcast satellite TV systems. It also specifies the format of movies and other programs that are distributed on DVD and similar discs. TV stations, TV receivers, DVD players, and other equipment are often designed to this standard. MPEG-2 was the second of several standards developed by the Moving Pictures Expert Group</p>
MPEG-4	.mp4	Level 2	<p>MPEG-4 is a method of defining compression of audio and visual (AV) digital data. It was introduced in late 1998 and designated a standard for a group of audio and video coding formats and related technology</p>
Quicktime	.mov	Level 3	<p>Proprietary freeware (closed source)</p>
Windows Media Video	.wmv	Level 3	<p>Windows Media is a video compression format for several proprietary codecs developed by Microsoft. The original video format, known as <i>WMV</i>, was originally designed for Internet streaming applications</p>
MPEG-2 Transport Stream	.ts, .tsv, .tsa	Level 3	<p>MPEG transport stream (<b>MPEG-TS</b>, <b>MTS</b> or <b>TS</b>) is a standard format for transmission and storage of audio, video, and Program and System Information Protocol (PSIP) data. It is used in broadcast systems such as DVB, ATSC and IPTV.</p>
<b>Audio file formats</b>			
MPEG audio	.mp3	Level 2	<p>MPEG-1 or MPEG-2 Audio Layer III,<sup>[4]</sup> more commonly referred to as MP3, is an encoding format for digital audio which uses a form of lossy data compression. It is a common audio format for consumer audio streaming or storage, as well as a de facto standard of digital audio compression for the transfer and playback of music on most digital audio players.</p>

Real Audio	.ra, .rm, .ram	Level 3	RealAudio is a proprietary audio format developed by RealNetworks and first released in April 1995. It uses a variety of audio codecs, ranging from low-bitrate formats that can be used over dialup modems, to high-fidelity formats for music. It can also be used as a streaming audio format, that is played at the same time as it is downloaded. In the past, many internet radio stations used RealAudio to stream their programming over the internet in real time. In recent years, however, the format has become less common and has given way to more popular audio formats.
Waveform Audio File Format (WAVE)	.wav	Level 1	Waveform Audio File Format (WAVE, or more commonly known as WAV due to its filename extension) is a Microsoft and IBM audio file format standard for storing an audio bitstream on PCs.
Windows Media Audio	.wma	Level 3	A closed format, owned by Microsoft
<b>Geospatial data</b>			
ESRI Shapefile	.shp, .shx, .dbf, optional - .prj, .sbx, .sbn	Level 1	The <b>Esri shapefile</b> , or simply a <b>shapefile</b> , is a popular geospatial vector data format for geographic information system software. It is developed and regulated by Esri as a (mostly) open specification for data interoperability among Esri and other GIS software products.
Geo-referenced TIFF	.tif, .tfw	Level 1	GeoTIFF is a public domain metadata standard which allows georeferencing information to be embedded within a TIFF file.
ESRI Geodatabase format	.mdb	Level 2	ESRI Personal Geodatabases are basically Microsoft Access files that contain spatial information.
MapInfo Interchange Format	.mif	Level 2	MapInfo Interchange Format is a map and database exporting file format of MapInfo software product. Some MIF-files also have a related MID-file.
Keyhole Mark-up Language	.kml, kmz.	Level 2	Keyhole Markup Language (KML) is an XML notation for expressing geographic annotation and visualization within Internet-based, two-dimensional maps and three-dimensional Earth browsers. KML was developed for use with Google Earth, which was originally named Keyhole Earth Viewer. It was created by Keyhole, Inc, which was acquired by Google in 2004. .kmz is the zipped format of .kml
Adobe Illustrator	.ai	Level 2	Adobe Illustrator Artwork (AI) is a proprietary file format developed by Adobe Systems for representing single-page vector-based drawings in either the EPS or PDF formats. The .ai filename extension is used by Adobe Illustrator.
CAD data	.dxf or .svg	Level 2	binary formats of GIS and CAD packages

Google-earth	.kml+xml	Level 1	
Geographical Mark-up Language	.gml	Level 1	
<b>Chemistry data</b>			<i>Convert NMR, IR, Raman, UV, Mass Spectrometry, files to JCAMP format for ease in sharing.</i>
NMR		Level 1	spectroscopy data and other plots which require the capability of representing contours as well as peak position and intensity
IR		Level 1	
Raman		Level 1	Ramanspectroscopie
UV		Level 1	
Mass Spectrometry		Level 1	
JCAMP (format for ease in sharing)		Level 1	<a href="http://www.jcamp-dx.org/protocols.html">http://www.jcamp-dx.org/protocols.html</a>
ChemDoodle		Level 1	Proprietary software tool for drawing chemical structures, diagrams and figures
Protein Data Bank	.pdb	Level 3	
Chemical/x-xyz	.xyz	Level 3	
<b>Databases</b>			
Delimited Flat File w/DDL		Level 1	A flat file database describes any of various means to encode a database model (most commonly a table) as a single file.
Microsoft Access	.mdb, .acdb	Level 3	
dBase format	.dbf	Level 2	
<b>Spreadsheets/Quantitative tabular data with minimal metadata</b>			a matrix of data with or without column headings or variable names, but no other metadata or labelling
Comma-separated values	.csv	Level 1	
Tab-delimited file	.tab	Level 1	
MS Excel	.xls, .xlsx	Level 3	
MS Access	.mdb, .accdb	Level 3	
dBase	.dbf	Level 2	

OpenDocument Spreadsheet	.ods	Level 2	
PDF/A	.pdf	Level 1	
<b>Archives</b>			
ZIP	.zip	Level 2	A base version of this data compression and archive file format is in the public domain, but newer versions have some patented features
GZIP	.gzip	Level 3	Gzip, which is short for GNU zip, a data compression utility for Unix and Linux that compresses files in gz format, usually in combination with tar. There are also versions available for Windows, OS / 2 and MS-DOS.
RAR	.rar	level 3	RAR is a proprietary archive file format that supports data compression, error recovery and file spanning. It was developed by a Russian software engineer, Eugene Roshal (the name RAR stands for Roshal ARchive) and the RAR software is licensed by win.rar GmbH.
TAR	.tar	Level 3	In computing, tar (derived from tape archive) is both a file format (in the form of a type of archive bitstream) and the name of a program used to handle such files. The format was created in the early days of Unix
TGZ	.tar.gz	Level 3	TGZ files are compressed files that are mainly associated with UNIX Tar File Gzipped.
JAVA-Archive	.jar	Level 3	
Matlab-data	.mat	Level 3	The MAT-file format is used by MATLAB to store binary data. MAT-files often contain variables that can be imported into programs, but they may also store arrays, functions, and other data. MAT-files are can be saved in different formats, including Level 4 and Level 5. The Level 4 format only supports character strings and two-dimensional matrices. The Level 5 format also supports multidimensional numeric arrays, objects, and structures.
<b>Applications</b>			
Javascript	.js	Level 3	
Shockwaveflash	.swf	Level 3	Adobe Flash format (formerly closed/undocumented, now partially or completely open)
Virtualbox	.vdi	Level 3	
<b>Numerical Data</b>			

Netcdf	.nc, .cdf	Level 1	NetCDF file format with CF metadata conventions for earth science data. Binary storage in open format with optional compression. Allows for direct web-access of subsets/aggregations of maps through OPeNDAP protocol.
Hdf5	hdf, h4, hdf4, h5, hdf5, he4, he5	Level 3	Hierarchical Data Format (HDF, HDF4, or HDF5) is the name of a set of file formats and libraries designed to store and organize large amounts of numerical data. Originally developed at the National Center for Supercomputing Applications, it is currently supported by the non-profit HDF Group, whose mission is to ensure continued development of HDF5 technologies, and the continued accessibility of data currently stored in HDF.