# Proposal to Implement BigTIFF Support in LibTiff

**NEWS:** We have located all four required sponsors. There are no more open slots. We will issue appropriate press release shortly.

## 0. Summary

BigTIFF logically extends the original TIFF file format (referred to as 'ClassicTIFF' from this point on), breaking the 4 gigabyte boundary, in theory allowing files up to 18,000 petabytes in size. The BigTIFF specification is the result of work by a variety of parties on the LibTiff mailing list, including the current LibTiff maintainers, Joris Van Damme and Adobe staff. The BigTIFF specification has not yet been officially approved by the TIFF specification owner (Adobe) but implementation within LibTiff could accelerate that process.

For more information on the BigTIFF file format, we recommend [AWare Systems' BigTIFF page.](http://www.awaresystems.be/imaging/tiff/bigtiff.html)

BigTIFF is expected to be especially useful for people and vendors that are confronted with unusually large images, and still seek to use an open, simple, and extendable format. This requirement is frequently seen in the geospatial field, but also affects large format scanners, medical imaging and other fields.

## 1. Sponsoring

It is planned that LibTiff 4.0, the BigTIFF upgrade to LibTiff, would start March 1, 2007. A preliminary version (LibTiff 4.0alpha1) will be operational by June 15, 2007. Testing and final release improvements for LibTiff 4.0 will be completed by July 30, 2007.

The LibTiff BigTIFF upgrade team is seeking USD 24,000 from four sponsors (USD 6,000 each) to fund the project. Sponsorship payment will be invoiced upon delivery of the LibTiff 4.0alpha1 release (on or before June 15) with a 30 day payable, giving time for some technical review.

In addition to the benefits of open interchange of BigTIFF data that comes from support in a public and free open source codec, sponsors will be given proper public acknowledgment. During development, they will be mentioned in the appropriate sections of the LibTiff and AWare Systems site.

When LibTiff 4.0 with BigTIFF support is released, they will additionally receive public acknowledgment in a formal press release, distributed widely to news venues in the imaging and geospatial industries.

A 'migration guide' document or any functional equivalent thereof will be included in the standard free distribution, but sponsors will additionally receive up to 20 hours of consulting and support on any BigTIFF migration issues that they may be facing, and/or any additional related requests they may have.

## 2. Development and Testing

The work will primarily be done by Joris Van Damme on behalf of his company AWare Systems. Joris was closely involved in the drafting of the BigTIFF file format proposal, and has also developed the proprietary AWare Systems TIFF codec that already supports BigTIFF. Joris Van Damme has a deep understanding of the TIFF format, and has been acting as a LibTiff co-maintainer for over a year, contributing the upgraded OJPEG codec as well as several other improvements.

Joris and AWare Systems have agreed to crosstest their proprietary codec and LibTiff's support for BigTIFF extensively. Joris will also extend the test image library included with LibTiff, with a number of varying BigTIFF test files. These files will primarily include test files with issues that relate closely to the BigTIFF file format and the difference with ClassicTIFF. For instance, in BigTIFF the datatypes TIFF\_LONG, TIFF\_LONG8, TIFF\_IFD and TIFF\_IFD8 are all valid for tags pointing to additional IFDs, and thus files will be included to illustrate and enable testing all of these. Additionally, Joris will build a tool to enable creating test files that exceed 4 gigabyte, as these can of course not be included in the test suite in a more direct manner, and a tool to convert files from ClassicTIFF to BigTIFF, as well as the other way around for source BigTIFF files that do not exceed 4 gigabyte in size.

Frank Warmerdam has also agreed to be involved in a consulting and validation role. Frank has been LibTiff's primary maintainer since approximately the year 2000, develops large-image exploitation software for the geospatial industry (GDAL) and is currently President of the Open Source Geospatial Foundation (OSGeo). Frank will also be ensuring that BigTIFF improvements are made accessible to all users of the GDAL library.

## 3. Implementation Strategy

Many people who have a need for BigTIFF, use LibTiff already. We thus plan to support BigTIFF in LibTiff, applying a minimum change strategy much like the one that was applied in the creation of the new file format in the first place.

To support BigTIFF, we will use a 64bit integer datatype. It is anticipated that some older platforms will not be able to comply with this need, and for that reason we will encapsulate all required changes inside a conditional compilation switch.

While it is anticipated that there will be ABI (application binary interface) changes as part of a BigTIFF support upgrade to LibTiff, and possibly some more to support other major upgrades to LibTiff, the plan is such that the source level API will remain compatible for most LibTiff applications. Applications using specialized interfaces may require some minor source code changes, but we will provide backwards compatibility to support the majority of existing application level code.

The resulting LibTiff version would transparently support reading traditional 32bit ClassicTIFF files, and 64bit BigTIFF files, as well as writing either ClassicTIFF or BigTIFF files based on a flag in the TIFFOpen/TIFFClientOpen call.

## 4. Intellectual Property and Licensing

The licensing agreement of LibTiff will remain unchanged.

## 5. Contact information

Please contact [Frank Warmerdam](mailto:warmerdam@pobox.com) and/or [Joris Van Damme](mailto:info@awaresystems.be) for more information on sponsorship agreements.