



# IMAGE INDUSTRY BEST PRACTICES DOCUMENT

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TIFF (TAGGED IMAGE FILE FORMATS) TAGS:  
GUIDANCE FOR STANDARDS

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VISIT [WWW.I3GGROUP.COM](http://WWW.I3GGROUP.COM)

# i3G: Image Industry Best Practices Document

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*TIFF (TAGGED IMAGE  
FILE FORMAT) TAGS:*  
Guidance for standards

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## EXECUTIVE SUMMARY

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The Check Clearing Act for the 21st Century (Check 21), enacted by US Congress in 2003, intended to make the US payment system more efficient by encouraging the financial services industry to adopt image based check technologies and electronic processing capabilities (image exchange). While the payments system and the consumer population has realized many efficiencies from check image technology as a whole, the electronification of checks has exacerbated particular operational issues which impedes the realization of the full value of image adoption.

One particular issue is the lack of common interpretation of TIFF (Tagged Image File Format) Tag standards. As variances to TIFF Tags continue to proliferate as the industry becomes more decentralized in check image capture, banks are at risk for growing returns volume and negative customer experiences due to the inability to use the image in various image applications at the paying bank.

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## INTRODUCTION – THE PROBLEM

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As financial services increase adoption of Image Exchange, the importance of defining standards for images becomes more critical. Financial institutions are also changing how checks are converted to images from centralized high volume reader sorters to decentralized capture at remote locations such as ATMS and also at customer desktop scanners. The number of choices for capture devices is also growing and the range covers high speed transports that can image 2000 documents a minute to the flat bed scanner on the home banks user's desk.

As imaging initially rolled out at a paying bank, the image was captured centrally by the paying bank and stored in the bank's archive and used for statement and research applications. Today, the paying bank receives check images directly clients and also external partners, so the controls that were once in place at the paying bank for image quality no longer exist. Paying institutions that have heavily invested in backend image applications, such as image statements are finding scenarios where check images that were captured externally, i.e. by a depositing institution, are not usable by their systems.

Due to system limitations at the Paying Institution for handling images that are "non-conforming", the responsibility for capturing and sending images that comply with image standards now falls to the sending financial institution. Images that are not in compliance may be returned by the paying bank as non-conforming. That lack of common interpretation of TIFF Tag standards and the numerous variations of the standard that exist in the market place hamper efficient check processing and cause needless returns activity – delaying payment and in some cases, negatively impacts the customer experience.

TIFF Tags are "wrappers" of images, providing instructions to the software applications on how to open and read the image. Variations in TIFF Tags make it difficult and sometimes impossible for some applications to open/read the image and are thus rejected or returned to the sending bank. More common understanding and tighter governance on the TIFF standards will alleviate returns volume and enable more straight-through check image processing.

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## INDUSTRY RECOMMENDATION

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i3G is proposing that all images for image exchange follow the TIFF 6.0 and ANS X9.100-181-2007 Standards. The ANS X9.100-181-2007 is a defined specific implementation of a TIFF (Tagged Image File Format) structure necessary to support proper electronic check exchange (ECE). As part of the ANS X9.100-181-2007, standard, allowable variances are defined in Table 3. The banks within i3G strongly encourage financial institutions to not create images with the variances wherever possible due to system limitations of legacy backend applications at paying institutions.

An additional consideration is the maximum size of the compressed image data. Front or Rear cannot exceed 200,000 bytes or Front and Rear combined cannot exceed 250,000 bytes. The resolution for an image for image exchange should only be 200 or 240 DPI.

The Sending Institution has responsibility to make sure the images it sends follows the recommended standards listed above. Capturing compliant images covers all points of image capture at the sending institution. Any Sending Institution that has remote deposit applications for clients or correspondent financial institution clients is responsible for making sure the check images captured remotely are also in compliance and meet the proposed standards.

The Paying Institution has a responsibility to validate images based on the TIFF 6.0 and ANS X9.100-181-2007 in a timely manner. Any items that are not in compliance may be returned to the sending bank. Items that are not in compliance may be returned as an administrative return with the return code of 'U' for Unusable Image. The Paying Bank can also accept images that are not in compliance if there applications are tolerant to handling the images.

Below is a list of Common TIFF Errors that are seen in the image exchange environment today. The errors listed below impact legacy systems at Paying Institutions.

Issue	Description
Multi-page TIFF	A Tiff image can actually contain more than one image inside of it. Each image would be defined as a page within the TIFF image. Image exchange only support Single-page TIFFs. There should only be one IFD (image file directory) within a TIFF image.
EOFB (End of Facsimile Block) Missing	The encodings of successive lines follow contiguously in the binary T.6-Encoding stream with no special initiation or separation code words. There are no provisions for fill codes or explicit end-of-line indicators. The encoding of the last line of the pixel array is followed immediately, in place of any additional line encodings, by a 24-bit End-of-Facsimile Block (EOFB).  000000000001000000000001.B.
EOFB present but followed by non-zero padding bytes	The EOFB sequence is immediately followed by enough 0-bit padding to fit the entire stream into a sequence of 8-bit bytes.
EOFB present but followed by extra zero padding bytes	The EOFB sequence is immediately followed by enough 0-bit padding to fit the entire stream into a sequence of 8-bit bytes.
Multiple instances of the same tag value	Each TIFF Tag shall be defined only once for an image. Multiple identical tags can create image display issues when they contain differing values.

Tags not in ascending order	TIFF Tags contained within an image must be in ascending order by Tag value.
IFDs without zero termination	4 bytes of 0 must be written for termination of the IFD
Missing RowsPerStrip	If the image is a multi-strip image the tag 278 must be included in the TIFF Tags.
XResolution (Tag 282) or YResolution (Tag 283) does not match the resolution of the image	Images shall only be 200 or 240 DPI and the values of TIFF Tags 282 and 293 must match the value of the image data. Mismatched resolutions will affect downstream applications such as IRD printing.

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## ABOUT I3G

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The Image Industry Interoperability Group, i3G, is a US financial services industry collaborative formed in 2008 by a small and diverse set of bank organizations with the mission to quickly solve for lingering exceptions and interoperability issues impeding check payment processing efficiencies. The group's goal is to eliminate a large percentage of industry processing exceptions with a few changes to industry operational practices and procedures. I3G members include Bank of America, The Federal Reserve Bank, Frost Bank, JP Morgan Chase & Co, Independent Community Bankers Association (represented by Midwest Independent Bank), Southwest Corporate Federal Credit Union, US Bank, and Wells Fargo. More information can be found about i3G and proposed industry solutions by visiting <http://www.i3ggroup.com> and [i3G's linkedin group page](#).

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## CONTACT INFO

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For more information about i3G and the industry solutions the group is tackling, visit [www.i3ggroup.com](http://www.i3ggroup.com) or email [info@i3ggroup.com](mailto:info@i3ggroup.com).