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Corrigendum 3
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SERIES T: TERMINALS FOR TELEMATIC SERVICES

Information technology – JPEG 2000 image coding system: Extensions

Technical Corrigendum 3

ITU-T Recommendation T.801 (2002) – Technical Corrigendum 3

INTERNATIONAL STANDARD ISO/IEC 15444-2
ITU-T RECOMMENDATION T.801

Information technology – JPEG 2000 image coding system: Extensions

Technical Corrigendum 3

Summary

This Corrigendum provides corrections to the descriptions of the Animation and Compositing data structures within the JPX file format.

NOTE – ISO/IEC 15444-2 Amendment 1 and Technical Corrigenda 1 and 2 are already integrated in T.801 approved by ITU-T on 2002-08.

Source

Corrigendum 3 to ITU-T Recommendation T.801 (2002) was approved on 8 January 2005 by ITU-T Study Group 16 (2005-2008) under the ITU-T Recommendation A.8 procedure. An identical text is also published as Technical Corrigendum 3 to ISO/IEC 15444-2.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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CONTENTS

INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – JPEG 2000 image coding system: Extensions

Technical Corrigendum 3

1) Clause M.5.1

Add a new subclause to clause M.5.1 (Mapping codestreams to compositing layers):

M.5.1.3 Establishing a sequence order for codestreams

A sequence order for codestreams is required for the subsequent ordering of compositing layers and in particular for the case where one or more compositing layers comprises more than one codestream.

Codestreams are assigned a sequence order equal to their position in the file, starting with zero. In the case where a Fragment Table box is used, the Fragment Table box is considered equivalent to a Contiguous Codestream box for the purpose of establishing a codestream sequence order for the referenced codestream.

2) Clause M.5.1.1

Amend paragraph 2 of clause M.5.1.1 (Establishing a sequence order for compositing layers) as follows:

● ● ●

If a Component Registration box is present in any Compositing Layer Header box, then there shall be one ~~Component Registration box~~Compositing layer header box ~~in~~for every Compositing Layer ~~Header box~~ in the file, each containing at least one Component Registration box. In this case, the order of compositing layers is given by the sequence order of compositing layer header boxes in the file.

● ● ●

3) Clause M.5.3.2.1

Amend the text in the second bullet of clause M.5.3.2.1 (Special cases of life and persistence) as follows:

● ● ●

– When PERSIST is true and LIFE is zero then this instruction should be executed together with the next instruction. In practice this combination may occur for a sequence of more than two instructions and shall place the reader into a frame composition mode. This mode is exited when an instruction with non-zero ~~PERSIST~~ LIFE is encountered or when the end of the animation is reached. The set of instructions executed whilst in frame composition mode is referred to as a frame composition sequence. In frame composition mode, a virtual compositing layer is created (off-screen) by executing the instructions in the frame definition sequence. The PERSIST and LIFE parameters for the closing instruction of a frame definition are applied to the virtual compositing layer as a whole. ~~This mode permits multi-sprite animation~~That is, upon close of frame composition mode, all of the compositing layers involved in the frame composition sequence acquire the PERSIST and LIFE values of the closing frame in the sequence.

● ● ●

4) Clause M.11.1

a) Amend the SF^i field definition of clause M.11.1 (Reader Requirements box) as follows:

SF^i: Standard flag. This field specifies a standard feature flag. The number of SF^i fields shall be equal to the value of the NSF field. This field is encoded as a 2-byte big endian unsigned integer. ~~Legal values of this field are shown in Table M.14~~ Legal values of this field are specified in Table M.14 and in extensions to this standard.

b) Add a new row to Table M.14 (Legal values of the SFi field) defining Value 70:

Table M.14 – Legal values of the SF^i field

Value	Meaning
1	Codestream contains no extensions
● ● ●	
65	Compositing layers have different colour spaces
66	Compositing layers have different metadata
70	Compositing layer uses sYCC enumerated colour space

5) Clause M.11.5

Amend the text in paragraph 2 of clause M.11.5 (JP2 Header box (superbox)) as follows:

● ● ●

Also, if the ~~codestream is~~JP2 Header box specified ~~by the JP2 Header box~~default information for any codestreams, then the semantic relationship of the Image Header box and Bits Per Component box contained within the JP2 Header box shall follow the rules defined in M.11.5.1 and M.11.5.2 respectively.

● ● ●

6) Clause M.11.5.1

Replace the entire definition of the IPR field in clause M.11.5.1 (Image Header box) as follows:

IPR: Intellectual Property. ~~The value of this field is identical to that defined for the JP2 file format.~~This parameter indicates whether this JPX file contains intellectual property rights information that is associated with the codestream or codestreams described by this Image Header box. If the value of this field is 0, those codestreams do not have associated rights information. If the value is 1, then those codestreams do have associated rights information. Other values are reserved.

7) Clause M.11.7.7

Amend clause M.11.7.7 as follows:

M.11.7.7 Codestream Registration box

When combining multiple codestreams to create a single compositing layer, it is important that the reference grids of those codestreams be properly registered to ensure the registration of the individual samples from the multiple components. This box specifies how those codestreams shall be registered when rendering the layer. A Compositing Layer Header box shall contain zero or one Codestream Registration boxes, and Codestream Registration boxes shall be found in no other locations in the file; a Codestream Registration box shall not be placed into the JP2 Header box to specify a default registration. If any Compositing Layer Header box contains a Codestream Registration box, then every Compositing Layer Header box shall contain a Codestream Registration box. If this Compositing Layer Header box does not contain a Codestream Registration box, then the compositing layer shall be represented by one and only one codestream.

If codestream registration is not specified for a particular compositing layer, then the codestreams in that compositing layer shall be aligned by directly aligning their reference grids at both (0,0) and (1,1).

If a Codestream Registration box exists, then the default display resolution (specified within a Resolution box with the same Compositing Layer Header box) applies to the compositing layer registration grid.

This registration is specified with respect to an independent compositing layer registration grid.

The type of the Codestream Registration box shall be 'creg' (0x6372 6567). The contents of this box shall be as follows:

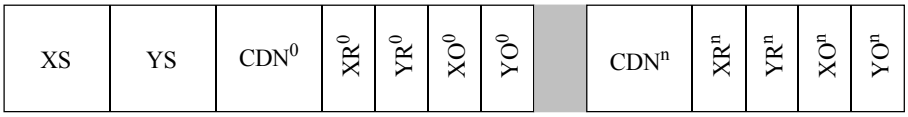

Figure M.23 – Organization of the contents of a Codestream Registration box

The fields of the codestream registration box may be interpreted in the context of the following equations defining the scaling factors RX^i and RY^i of the ith codestream in x and y:

$RX^i = XR^i / XS$

$RY^i = YR^i / YS$

and the offsets OX^i and OY^i of the ith codestream in x and y:

$OX^i = XO^i / XS$

$OY^i = YO^i / YS$

on the compositing layer registration grid. The overall area of the registration grid is defined to be the intersection of the areas covered by the scaled and offset component codestreams grown out as required to the nearest whole integer registration grid point. The requirement that $XO^i < XS$ and $YO^i < YS$ ensures that this intersected area always includes the origin (0,0) of the compositing layer registration grid.

If a Codestream Registration box exists, then the default display resolution (specified within a Resolution box with the same Compositing Layer Header box) applies to the compositing layer after all components have been rescaled and registered.

XS: Horizontal grid size. This field ~~specifies~~defines the number of horizontal fractional grid points from (0, 0) to (1, 0) on the compositing layer registration grid. These fractional grid points are used to measure the distance between the reference grids of the individual codestreams. This field is encoded as a 2-byte unsigned integer.

YS: Vertical grid size. This field ~~specifies~~defines the number of vertical fractional grid points from (0, 0) to (0, 1) on the compositing layer registration grid. These fractional grid points are used to measure the distance between the reference grids of the individual codestreams. This field is encoded as a 2-byte unsigned integer.

CDN^i: Codestream number. This field specifies the number of the codestream for this registration value.

XR^i: Horizontal resolution. This field specifies the horizontal distance between points on the reference grid of the codestream specified by the CDN^i parameter, measured in the number of fractional points on the compositing layer registration grid. This field effectively specifies the horizontal scaling needed to match the codestream's reference grid with the compositing layer registration grid. This field is encoded as a 1-byte unsigned integer.

YR^i: Vertical resolution. This field specifies the vertical distance between points on the reference grid of the codestream specified by the CDN^i parameter, measured in the number of fractional points on the compositing layer registration grid. This field effectively specifies the vertical scaling needed to match the codestream's reference grid with the compositing layer registration grid. This field is encoded as a 1-byte unsigned integer.

XO^i: Horizontal offset. This field specifies the horizontal distance (to the right) from the origin of the compositing layer registration grid to the centre of the top left point on the reference grid of the codestream specified by the CDN^i parameter~~ to the centre of the top left point on the compositing layer registration grid.~~. This field is encoded as a 1-byte unsigned integer. Its value must be strictly less than the value of XS.

YO^i: Vertical offset. This field specifies the vertical distance (downward) from the origin of the compositing layer registration grid to the centre of the top left point on the reference grid of the codestream specified by the CDN^i parameter ~~to the centre of the top left point on the compositing layer registration grid.~~ This field is encoded as a 1-byte unsigned integer. Its value must be strictly less than the value of YS.

Table M.35 – Format of the contents of the Codestream Registration box

Field name	Size (bits)	Value
XS	16	0-65 535
YS	16	0-65 535
CDN^i	16	0-65 535
XR^i	8	0-255
YR^i	8	0-255
XO^i	8	0-255
YO^i	8	0-255

8) Clause M.11.10.1

Amend clause M.11.10.1 as follows:

M.11.10.1 Composition Options box

The Composition Options box specifies parameters that apply to the composition or animation as a whole. The Composition Options box shall be the first box in the Composition box and a Composition Options box shall not be found in any other location in the file.

The type of the Composition Options box shall be 'copt' (0x636F 7074) and contents of the box shall have the following format:

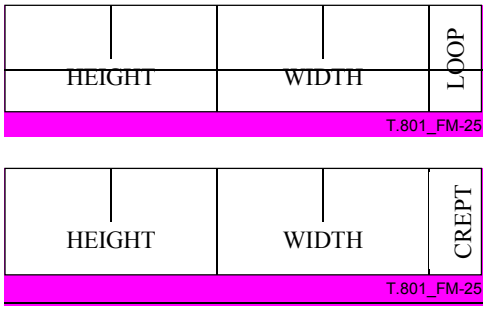

Figure M.25 – Organization of the contents of a Composition Options box

HEIGHT: Rendered result height. This field specifies the height, in samples, of the final rendered result. The resolution of this value is optionally defined in the Default Display Resolution box in the JP2 Header box. This field is encoded as a 4-byte unsigned integer.

WIDTH: Rendered result width. This field specifies the width, in samples, of the final rendered result. The resolution of this value is optionally defined in the Default Display Resolution box in the JP2 Header box. This field is encoded as a 4-byte unsigned integer.

GREPT~~**LOOP**~~: ~~Looping count. This field specifies the number of times to fully execute the display instructions.~~Global Repetition. This field specifies the number of times to fully repeat the display instructions, after executing the display instructions the first time. For a GREPT value of zero this means the entire set of instructions in the comp box is executed once. A value of 255 indicates that the reader should repeat the entire set of instructions indefinitely. Prior to each execution of the instruction set, the display area shall be restored to its original state and all instructions' composition layer association reset. Each loop execution should be visually equivalent to redisplaying the composition from scratch. This field is encoded as a 1-byte unsigned integer.

Table M.37 – Format of the contents of the Composition Options box

Parameter	Size (bits)	Value
HEIGHT	32	1-2^{32}–1
WIDTH	32	1-2^{32}–1
~~LOOP~~ GREPT	8	0-255

9) Clause M.11.10.2

Amend the description of the REPT field in clause M.11.10.2 as follows:

REPT: Repetition. This field specifies the number of times to repeat this particular set of instructions after executing the instruction set the first time. The instructions are always executed at least once (REPT is zero) and the instructions may apply to different compositing layers on each repetition as determined by the Next-use field of the instructions. This field is encoded as a 2-byte big endian unsigned integer. A value of 65 535 indicates to repeat the instruction indefinitely.

10) Clause M.11.10.2.1

Amend the description of the NEXT-USE field in clause M.11.10.2.1 as follows:

NEXT-USE: Number of instructions before reuse. This field specifies the number of instructions that shall be executed before reusing the current compositing layer. This field allows readers to simply optimize their caching strategy. A value of zero implies that the current image shall not be reused for any ensuing instructions, notwithstanding the execution of a global loop as a result of a non-zero value of the ~~LOOP~~GREPT parameter in the Composition Options box. A value of one (1) implies that the current compositing layer will be used with the next instruction and so on. The ~~composition~~compositing layer passed on for reuse in this manner must be the original compositing layer, prior to any cropping or scaling indicated by the current instruction. If this field is not present, the number of instructions shall be set to zero, indicating that the current compositing layer shall not be reused. This field is encoded as a 4-byte big endian unsigned integer.

11) Clause N.3

a) Amend clause N.3 as follows:

N.3 Scope of metadata definitions

This annex consists of ~~four~~ five logical groups of metadata as well as common definitions of dataypes that are referred to by other metadata definitions. While each group is logically partitioned, they may be linked to each other to form additional semantics.

N.3.1 Image Creation metadata

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b) Add a new clause N.3.6 as follows:

N.3.6 Image Identifier metadata

Image Identifier metadata is used to uniquely identify the image.

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Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
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Series H	Audiovisual and multimedia systems
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