



Information technology — Coding of audio-visual objects —
Part 20:
Lightweight Application Scene Representation (LAsER) and
Simple Aggregation Format (SAF)

TECHNICAL CORRIGENDUM 2

Technologies de l'information — Codage des objets audiovisuels —

Partie 20: Représentation de scène d'application allégée (LAsER) et format d'agrégation simple (SAF)

RECTIFICATIF TECHNIQUE 2

Technical Corrigendum 2 to ISO/IEC 14496-20:2006 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

In 6.8.10.1 (as added by Technical Corrigendum 1), add sentence at the end:

Upon activation, a conditional element emits a beginEvent and the expression “condID.begin” where condID is the ID of a conditional element can be used in begin/end attributess.

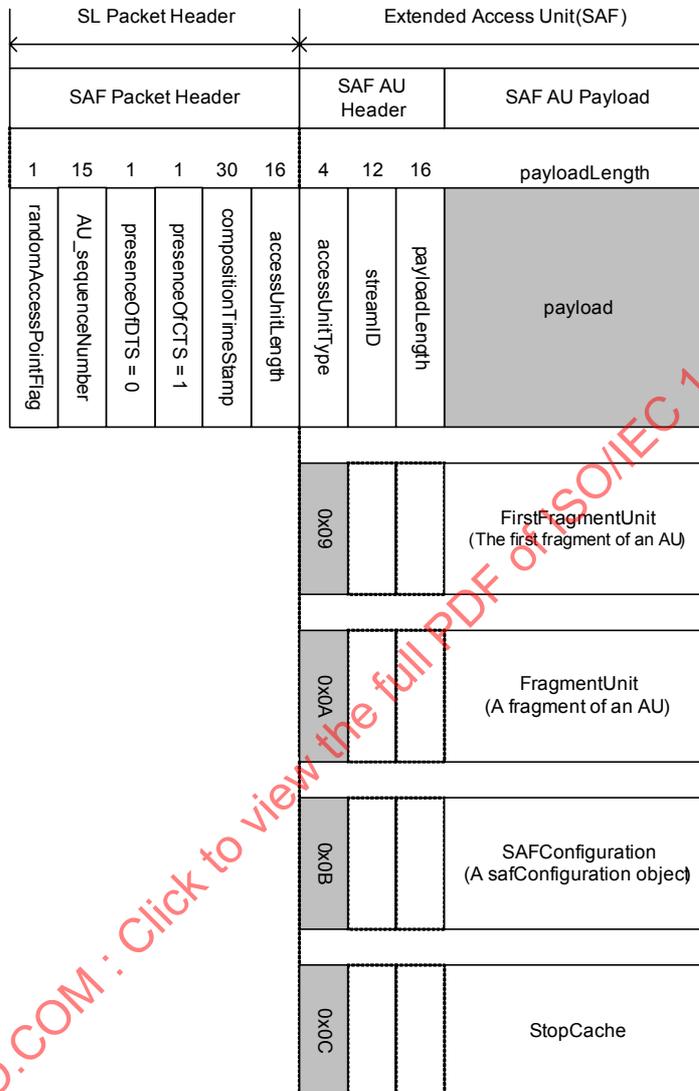
In 6.8.11.1 (as added by Technical Corrigendum 1), replace:

LAsER elements implementing the interaction moving the object associated with the virtual pointer shall be placed as children of the cursor element.

with:

LASeR elements implementing the interaction moving the object associated with the virtual pointer shall be placed as children of the cursorManager element.

In 7.3, replace the second part of Figure 4 (as modified by Technical Corrigendum 1) with:



In 7.7, replace the reference to 6.5 with a reference to 6.6.

Replace Clause 8 with:

8 Profiles

8.1 Overview

The LASeR profiles are defined in the SceneGraph dimension of MPEG-4 Systems profiles. The purpose of LASeR mini is to allow very constrained implementations of LASeR, including J2ME implementations. One specific feature of mini is that the implementation does not need to implement 2 trees, one DOM tree and one composition tree, or otherwise keep the memory of the decoded value for each attribute.

8.2 LAsER mini

8.2.1 Applications

Rich-media services on mid- and lower-end embedded devices.

8.2.2 List of Tools/Functionalities

8.2.2.1 video element

The attribute **transformBehavior** shall be restricted to values “pinned | pinned90 | pinned180 | pinned270”. The attribute **overlay** shall be restricted to values “top” or “fullscreen”.

8.2.2.2 stroking

The attributes **stroke-linecap** and **stroke-linejoin** are restricted to the value “butt” and “miter” respectively. The attributes **stroke-miterlimit**, **stroke-dasharray** and **stroke-dashoffset** are forbidden.

8.2.2.3 inheritance

Attributes with a possible value of “inherit” are only allowed on objects which use their value directly, not on objects that pass the value to their children. The “inherit” value is forbidden.

NOTE this restriction will be implemented in a schema that will be used for validation of the profile.

Hints such as *-rendering are only allowed on the root svg.

pointer-events is only allowed on the root svg.

8.2.2.4 animation

For elements **set**, **animate**, **animateColor**, **animateTransform** and **animateMotion**, the following restrictions apply:

- the value of the attribute **fill** is restricted to “freeze”,
- the value of the attribute **additive** is restricted to “replace”,
- either attribute **from** or **values** must be specified.

The value of restart is restricted to “**always**”.

Any content requiring the restoration of a DOM value of an attribute after it has been animated is non conformant. Authors shall make sure that, when deleting an animation or replacing an xlink:href, any previously animated value is made irrelevant by any appropriate mean (e.g. deletion of the target element, replacement of the animated value, etc.)

8.2.2.5 xlink and xml

Attributes xml:base, xml:lang, xml:space, xlink:title, xlink:type, xlink:role, xlink:arcrole, xlink:actuate and xlink:show are forbidden.

8.2.2.6 LAsER Commands

color-rendering, shape-rendering, text-rendering, image-rendering are not updatable in this profile.

Update of attributes from timed elements are restricted in the following manner:

- accumulate, additive, attributeName, by, calcMode, dur, fill, from, id, keyPoints, keySplines, keyTimes, max, min, path, repeatCount, repeatDur, restart, to, values, xlink:actuate, xlink:arcrole, xlink:href, xlink:role, xlink:show, xlink:title, xlink:type, xml:base cannot be updated
- begin, end, clipBegin and clipEnd may be updated

8.2.2.7 uDOM

uDOM is not included.

8.2.2.8 Navigation

The events focusin and focusout are not supported. The attribute focusable, focusHighlight and nav-* are not supported.

8.2.2.9 text

The attributes x and y of text can only take single values, not lists of coordinates. The attribute xml:space is mandatory with value "preserve" on text and tspan. The possible children for text are restricted to: tspan.

8.2.2.10 Units

Only % and px are allowed as length units.

8.2.2.11 transform

The ref() construct is not allowed in transform attribute values.

8.2.2.12 System Paint Servers

System paint servers are not included.

8.2.2.13 Events

The following events are allowed: activate, mousedown, mouseup, mouseover, mouseout, mousemove, load, beginEvent, endEvent, repeatEvent, textInput, accessKey(keyCode), longAccessKey(keyCode), pause, play, executionTime.

8.2.2.14 SMIL hyperlinking

Hyperlinks to an element, whether timed or not, are not allowed.

8.2.2.15 use

The xlink:href attribute of the use element is restricted to designating the ID of an element of the current scene. More complex URLs are not included.

8.2.3 Comparison with existing profiles and object types

This is a subset of LAsER Core.

8.2.4 Profile definition

Table COR2.1 defines the allowed elements in the profile and the list of their possible attributes, possibly with restrictions when listed in bold.

Table COR2.1 – Allowed elements and their possible attributes in LAsER mini

Element name	Attributes
a	id display transform xlink:href
animate	id lsr:enabled begin end dur repeatCount repeatDur restart="always" attributeName fill="freeze" to xlink:href(no replace) from by values calcMode="discrete linear" keyTimes additive="replace" accumulate
animateColor	id lsr:enabled begin end dur repeatCount repeatDur restart="always" attributeName fill="freeze" to xlink:href(no replace) from by values calcMode="discrete linear" additive="replace" accumulate
animateMotion	id path keyPoints rotate lsr:enabled begin end dur repeatCount repeatDur restart="always" fill="freeze" to xlink:href(no replace) from by values calcMode="discrete linear paced" keyTimes additive="replace" accumulate
animateTransform	id type lsr:enabled begin end dur repeatCount repeatDur restart="always" attributeName fill="freeze" to xlink:href(no replace) from by values calcMode="discrete linear" keyTimes additive="replace" accumulate
audio	id begin end clipBegin clipEnd repeatCount repeatDur audio-level xlink:href
circle	id cx cy r display fill fill-opacity fill-rule stroke stroke-opacity stroke-width transform
conditional	id begin type lsr:enabled
sr:cursorManager	id x y xlink:href
defs	id
desc	id
ellipse	id rx ry cx cy display fill fill-opacity fill-rule stroke stroke-opacity stroke-width visibility transform
foreignObject	id width height x y viewport-fill viewport-fill-opacity display
g	id display transform
image	id width height x y transformBehavior(no geometric) display transform xlink:href
line	id x1 y1 x2 y2 display stroke stroke-opacity stroke-width transform
ev:listener	id lsr:enabled delay event observer handler propagate defaultAction target
metadata	id
mpath	id xlink:href
path	id d display fill fill-opacity fill-rule stroke stroke-opacity stroke-width transform
polygon	id points display fill fill-opacity fill-rule stroke stroke-opacity stroke-width transform
polyline	id points display fill fill-opacity fill-rule stroke stroke-opacity stroke-width visibility transform
rect	id width height x y rx ry display fill fill-opacity fill-rule stroke stroke-opacity stroke-width transform
lsr:rectClip	id size display transform
lsr:selector	id choice display transform
set	id lsr:enabled begin end dur repeatCount repeatDur restart attributeName fill="freeze" to xlink:href(no replace)
lsr:simpleLayout	id delta display transform
svg	id width height viewBox preserveAspectRatio zoomAndPan="disable" viewport-fill viewport-fill-opacity display pointer-events color-rendering shape-rendering image-rendering text-rendering
text	id display display-align fill fill-opacity fill-rule font-family font-size font-style font-weight line-increment stroke stroke-opacity stroke-width text-anchor editable x y transform text-decoration xml:space="preserve"
title	id
tspan	id display fill fill-opacity fill-rule font-family font-size font-style font-weight line-increment stroke stroke-opacity stroke-width text-anchor text-decoration xml:space="preserve"
use	id overflow x y display transform xlink:href
video	id begin end clipBegin clipEnd repeatCount repeatDur audio-level xlink:href width height x y overlay="top" transformBehavior(no geometric) transform fullscreen

8.2.5 Level definitions

Level 0: only one scene stream active at a time

8.3 LAsER full

8.3.1 Applications

Advanced rich-media services on higher end embedded devices.

8.3.2 List of Tools/Functionalities

This is the complete profile at the date of its creation.

8.3.3 Comparison with existing profiles and object types

This profile is a superset of LAsER mini.

8.3.4 Profile definition

Table COR2.2 defines the allowed elements in the profile and the list of their possible attributes.

Table COR2.2 – Allowed elements and their possible attributes in LAsER full

Element name	Attributes
a	audio-level color color-rendering display display-align externalResourcesRequired fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage target text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type
animate	accumulate additive attributeName begin by calcMode class dur enabled end fill from id keySplines keyTimes max min repeatCount repeatDur restart to values xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space
animateColor	accumulate additive attributeName begin by calcMode class dur enabled end fill from id keySplines keyTimes max min repeatCount repeatDur restart to values xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space
animateMotion	accumulate additive attributeName begin by calcMode class dur enabled end fill from id keyPoints keySplines keyTimes max min path repeatCount repeatDur restart rotate to values xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space
animateTransform	accumulate additive attributeName begin by calcMode class dur enabled end fill from id keySplines keyTimes max min repeatCount repeatDur restart to type values xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space
audio	audio-level begin class dur end externalResourcesRequired id lsr:syncReference repeatCount repeatDur requiredExtensions requiredFeatures requiredFormats syncBehavior syncTolerance systemLanguage type xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space type
circle	audio-level class color color-rendering cx cy display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-weight font-variant id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events r requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
lsr:conditional	id class style begin enabled externalResourcesRequired xlink:href xlink:title xlink:type xlink:role xlink:arcrole xlink:actuate xlink:show xml:base xml:lang xml:space
lsr:cursorManager	id class style xml:base xml:lang xml:space xlink:href xlink:title xlink:type xlink:role xlink:arcrole xlink:actuate xlink:show x y

Element name	Attributes
defs	audio-level class color color-rendering display display-align fill fill-opacity fill-rule font-family font-size font-style font-variant font-weight id image-rendering line-increment pointer-events shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width text-anchor text-rendering vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
desc	class id xml:base xml:lang xml:space
ellipse	audio-level class color color-rendering cx cy display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events requiredExtensions requiredFeatures requiredFormats rx ry shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
foreignObject	audio-level class color color-rendering display display-align externalResourcesRequired fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight height id image-rendering line-increment pointer-events requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering vector-effect viewport-fill viewport-fill-opacity visibility width x xml:base xml:lang xml:space y
g	id class style xml:base xml:lang xml:space audio-level color color-rendering display display-align fill fill-opacity fill-rule font-family font-size font-style text-decoration font-weight font-variant image-rendering line-increment pointer-events shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width text-anchor text-rendering viewport-fill viewport-fill-opacity vector-effect visibility lsr:rotation lsr:scale lsr:translation transform requiredFeatures requiredExtensions systemLanguage requiredFormats requiredFonts nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable focusHighlight externalResourcesRequired
image	class display externalResourcesRequired nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable height id lsr:rotation lsr:scale lsr:translation opacity pointer-events requiredExtensions requiredFeatures requiredFormats systemLanguage transform transformBehavior type visibility width x xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space y type preserveAspectRatio viewport-fill viewport-fill-opacity
line	audio-level class color color-rendering display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility x1 x2 xml:base xml:lang xml:space y1 y2
linearGradient	audio-level class color color-rendering display display-align fill fill-opacity fill-rule font-family font-size font-style font-variant font-weight gradient-units id image-rendering line-increment pointer-events shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width text-anchor text-rendering vector-effect viewport-fill viewport-fill-opacity visibility x1 x2 xml:base xml:lang xml:space y1 y2
ev:listener	id enabled event handler observer phase propagate defaultAction target

Element name	Attributes
metadata	class id xml:base xml:lang xml:space
mpath	class id xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space
path	audio-level class color color-rendering d display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pathLength pointer-events requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
polygon	audio-level class color color-rendering display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events points requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
polyline	audio-level class color color-rendering display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events points requiredExtensions requiredFeatures requiredFormats shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
radialGradient	audio-level class color color-rendering cx cy display display-align fill fill-opacity fill-rule font-family font-size font-style font-variant font-weight gradient-units id image-rendering line-increment pointer-events r shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width text-anchor text-rendering vector-effect viewport-fill viewport-fill-opacity visibility xml:base xml:lang xml:space
rect	audio-level class color color-rendering display display-align fill fill-opacity fill-rule nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable font-family font-size font-style font-variant font-weight height id image-rendering line-increment lsr:rotation lsr:scale lsr:translation pointer-events requiredExtensions requiredFeatures requiredFormats rx ry shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width systemLanguage text-anchor text-rendering transform vector-effect viewport-fill viewport-fill-opacity visibility width x xml:base xml:lang xml:space y
lsr:rectClip	id class style xml:base xml:lang xml:space audio-level color color-rendering display display-align fill fill-opacity fill-rule font-family font-size font-style text-decoration font-weight font-variant image-rendering line-increment pointer-events shape-rendering solid-color solid-opacity stop-color stop-opacity stroke stroke-dasharray stroke-dashoffset stroke-linecap stroke-linejoin stroke-miterlimit stroke-opacity stroke-width text-anchor text-rendering viewport-fill viewport-fill-opacity vector-effect visibility lsr:rotation lsr:scale lsr:translation transform requiredFeatures requiredExtensions systemLanguage requiredFormats requiredFonts nav-right nav-next nav-up nav-up-right nav-up-left nav-prev nav-down nav-down-right nav-down-left nav-left focusable focusHighlight externalResourcesRequired size
script	begin class enabled externalResourcesRequired id type xlink:actuate xlink:arcrole xlink:href xlink:role xlink:show xlink:title xlink:type xml:base xml:lang xml:space type