
**Information technology — Coding of
audio-visual objects —**

Part 20:

**Lightweight Application Scene
Representation (LAsER) and Simple
Aggregation Format (SAF)**

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**AMENDMENT 2: Technology for scene
adaptation**

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

AMENDEMENT 2: Technologies pour adaptation de scène

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 2 to ISO/IEC 14496-20:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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Information technology — Coding of audio-visual objects —

Part 20:

Lightweight Application Scene Representation (LAsER) and Simple Aggregation Format (SAF)

AMENDMENT 2: Technology for scene adaptation

In Table 3, add the following new LAsER events:

Event name	Namespace	Description	Bubble	Canc.	IDL
"DisplaySizeChanged(A)"	Urn:mpeg:mpeg4:laser:200x	Occurs when the terminal screen or viewport size has been changed to the specified 'A' value. 'A' is expressed in Inches.			DisplaySizeChangedEvent
"MemoryStatus(a,b,c)"	Urn:mpeg:mpeg4:laser:200x	Occurs when the terminal memory occupancy changes more than the each specified parameter.			MemoryStatusEvent

The parameters of **MemoryStatus** event are:

- **a**: number of graphics points. If the number of graphic points released/allocated by the terminal is strictly less than **a**, the event is not triggered.
- **b**: number of Unicode characters. If the number of Unicode characters released/allocated by the terminal is strictly less than **b**, the event is not triggered.
- **c**: size, in kilo-bytes, of the composition buffers (as described in 6.11.3). If the size released/allocated by the terminal is strictly less than **c**, the event is not triggered.

In 6.5.6, add the new attribute *delta* to *ExternalValueEvent*:

```
interface ExternalValueEvent : LAsEREvent {
    readonly attribute float absoluteValue;
    readonly attribute boolean computableAsFraction;
    readonly attribute float fraction;
    readonly attribute signed long delta;
};
```

Attributes

- **absoluteValue**: This value represent the status of a resource of any kind, e.g. the remaining battery time.
- **computableAsFraction**: This value indicates whether a fraction can be computed from the absoluteValue.
- **fraction**: This value shall be between 0 and 1 inclusively and represent the status of the resource, e.g. the fraction of remaining battery time over operation time when fully charged.
- **delta**: The delta field carries the difference of absoluteValue between this occurrence of the event and the previous occurrence.

After 6.5.6.2, add the following new subclauses:

6.5.6.3 DisplaySizeChanged Event

```
interface DisplaySizeChangedEvent : LAsER Event {  
    readonly attribute SVGLength diagonal;  
    readonly attribute SVGLength screenWidth;  
    readonly attribute SVGLength screenHeight;  
};
```

No defined constants

Attributes

- **diagonal**: This value indicates the new screen or viewport diagonal size. The diagonal value must be consistent with the screenWidth and screenHeight values. The value is expressed in inches.
- **screenWidth**: This value indicates the new viewport width. The value is expressed in pixels.
- **screenHeight**: This value indicates the new viewport height. The value is expressed in pixels.

6.5.6.4 MemoryStatus Event

```
interface MemoryStatusEvent : LAsER Event {  
    readonly attribute integer numberOfPoints;  
    readonly attribute Integer numberOfCharacters;  
    readonly attribute Integer compositionMemorySize;  
};
```

No defined constants

Attributes

- **numberOfPoints**: number of points allocated/freed by the terminal.
- **numberOfCharacters**: number of Unicode characters allocated/freed by the terminal.
- **compositionMemorySize**: composition memory size of images allocated/freed by the terminal.

In 6.6.2.2, add the following new attributes and tables:

- **adaptationType**: the LAsERHeader can signal a set of adaptation constraints in the form of type and value pairs. These type and value pairs can then be referenced in an **AdaptiveUpdateGroup** update to indicate that the given group of updates shall only be applied if the given adaptation constraints match the LAsER engine characteristics (e.g. required display size). The list of adaptation types is given in Table AMD2.1.
- **adaptationTypeValue**: indicates the value of the required LAsER engine characteristic described in the adaptation constraint type.
- **adaptationConstraints**: this attribute represents a list of indexes in the set of adaptation constraints required to process the scene segment.

Table AMD2.1 — adaptationType values

adaptationType	Description
0x01	Indicates the minimum viewport size required to process the associate LAsER update. The value describes the viewport diagonal, expressed in inches.
0x02	minimum memory size expressed in the same unit as min memory attribute.
0x03	adaptation filter as defined in 6.13
0x04	implicit Boolean (eg no value coded) evaluating to TRUE if the terminal is capable of mixing an additional audio object
0x05	Boolean evaluating to TRUE if the terminal is capable of composing an additional image object. One parameter is given to determine whether overlaying or regular composition is desired
0x06	Boolean evaluating to TRUE if the terminal is capable of composing an additional video object. One parameter (Boolean, one bit) is given to determine whether overlaying or regular composition is desired
0x07	Evaluates to TRUE if the indicated Interaction method is supported. Refer to Table AMD2.2 for a list interaction method types
0x08 – 0xFF	Reserved

Table AMD2.2 InteractionMethodType values

InteractionMethodType	Description
0x00	None.
0x01	Stylus
0x02	Mouse
0x03	Full keyboard
0x04	Keypad (cellphone or similar)
0x05-0x80	ISO Reserved
0x81-xFE	User Reserved
0xFF	ISO Reserved

After 6.7.16, add the following new subclause:

6.7.17 AdaptiveUpdateGroup

6.7.17.1 Semantics

The **AdaptiveUpdateGroup** update is a wrapper of LAsER updates with an indication of the associated required adaptation criteria. It can be used for adaptation purposes.

6.7.17.2 Attributes

adaptationConstraints: this attribute represents a list of indexes in the set of adaptation constraints defined in the LAsERHeader required to process the associated group of updates.

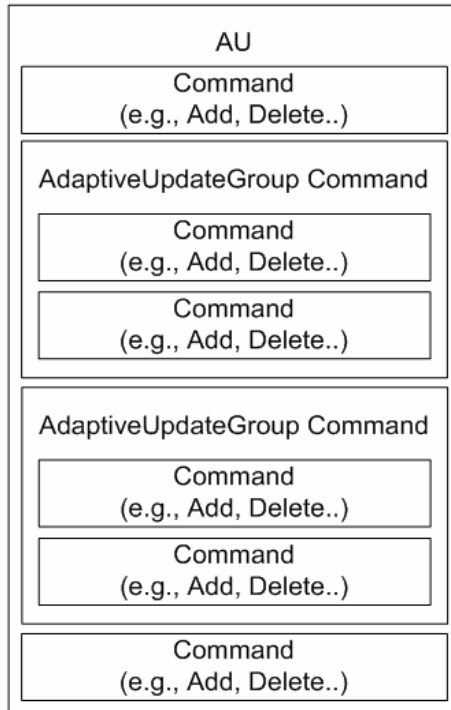


Figure AMD2.1 — LASer updates in one LASer Access Unit (AU).

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Example of Scene Segment Level and Command Level Switching:

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```

<LASerHeader ... adaptationConstraints=" ... ">
  <AdaptiveSceneInfo>
    <constraint adaptationType="0x01" adaptationTypeValue=" ... "/>
    <constraint adaptationType=" ... " adaptionTypeValue=" ... "/>
    <constraint adaptationType=" ... " adaptionTypeValue=" ... "/>
  </AdaptiveSceneInfo>
</LASerHeader>

<!-- a AU start -->
... commands(e.g., Add, Delete,...) ...

<AdaptiveUpdateGroup adaptationConstraints=" ... ">
... commands ...
</AdaptiveUpdateGroup>

<AdaptiveUpdateGroup adaptationConstraints=" ... ">
... commands ...
</AdaptiveUpdateGroup>

... commands ...

<!-- a AU End -->
  
```


At the end of 6.8.3, add the following new paragraph:

The `xlink:href` attribute of the `a` element may contain a special URL such as “tel:06778899”, thus using the `rfc3966` definition in order to signal a “click to call” element. Other special URLs may be used to send messages to external systems for which the LAsER engine works as user interface.

After 6.8.59, add the following new subclause:

6.8.60 LAsER parsingSwitch

6.8.60.1 Semantics

The ***parsingSwitch*** element is a parsing construct which signals scene tree alternatives with respect to memory requirements. A LAsER engine loads ***parsingSwitch*** subtrees in the scene tree based on its memory occupancy. The ***minMemory*** attribute may be used on direct children elements of the ***parsingSwitch*** to indicate the foreseen memory requirements.

The children of the ***parsingSwitch*** element are loaded according to the ***mode*** attribute.

6.8.60.2 attributes

- ***mode***: this attribute selects how children of the ***parsingSwitch*** element are loaded by the LAsER engine. It can take the following values
 - “descending”: the children of the ***parsingSwitch*** element are listed in decreasing order with respect to their memory requirements and only the first subtree that fits in the available memory is loaded.

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 - “ascending”: the children of the ***parsingSwitch*** element are listed in increasing order with respect to their memory requirements and only the last subtree that fits in the available memory is loaded.
 - “incremental”: the children of the ***parsingSwitch*** element are listed in increasing order with respect to their memory requirements. Subtrees are loaded in listed order and loading stops at the first subtree that doesn’t fit in the available memory.