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Table of Contents

[1. Introduction 2](#_Toc46927658)

[2. Timed Text clarification of “track” (m54429) 2](#_Toc46927659)

[2.1 Background 2](#_Toc46927660)

[2.2 Times, samples and tracks 2](#_Toc46927661)

[3. Sparse tracks (Explicit Padding of Subtitles and Timed Text tracks to comply with CMAF track/CMAF presentation model #9) 2](#_Toc46927662)

[3.1 Background 3](#_Toc46927663)

[3.2 tfhd duration-is-empty 3](#_Toc46927664)

[3.3 EBU Tech 3381 empty document 3](#_Toc46927665)

# Introduction

This documents the defects under investigation for 14496-30, 2nd Ed (Timed Text). It contains the substance of the following inputs:

* [m54429](http://wg11.sc29.org/doc_end_user/documents/131_OnLine/wg11/m54429-v1-m54429-TimedTextTrack.zip) Timed Text clarification of "track"
* [CMAF github #9 “sparse tracks](https://github.com/MPEGGroup/CMAF/issues/9)”

# Timed Text clarification of “track” (m54429)

## Background

14496-30 does not consider Segmented tracks and is focused mainly on a file that has video, audio and caption tracks and a duration of the length of the coded program material.

Also, 14496-30 constrains the TTML times as follows: “…the begin and end attributes of the <body> element, if used, are relative to the start of the track, not relative to the start of the sample. This is shown in Figure 1…”

## Times, samples and tracks

When tracks are Segmented some provisions of 14496-30 are incomplete and ambiguous which has resulted in different interpretations of how timed text times relate to the sample and “track”, specifically:

1. It is very unusual to put time values on the <body> element. They are normally on the <p> or <span> and sometimes <div>. Does this mean that the constraint only applies to the rarely-used-for-time <body> element and not the other elements? This needs clarification since the intent was apply top level values whether on <body>, <div> or <p>.
2. In the case where there is a track with only one sample, the last phrase (“not relative to the start of the sample”) is conflicting in a Segment where there is only one sample. This needs clarification for the case where the presentation time of that sample is 0.
3. Figure 1 does not in fact show anything on the <body> element – only the <div> and <p>. This needs correction.

Clarification is needed on the mapping of the TTML document timeline to ISOBMFF presentation timeline. This should deal with improving the notion of "top-level internal timing values" which is not correct according to the discussion in the TTWG today ([see minutes](https://www.w3.org/2020/07/02-tt-minutes.html)).

# Sparse tracks (Explicit Padding of Subtitles and Timed Text tracks to comply with CMAF track/CMAF presentation model #9)

## Background

See [CMAF github #9 “sparse tracks](https://github.com/MPEGGroup/CMAF/issues/9)”. Some highlights:

In some practical cases, subtitles or timed text are not available (e.g. at the end of a presentation)…it would be nice… [to] include a recommendation for using empty subtitle timed text samples that have a timespan but do not contain text. This is supported in 14496-30 but it is not explicit or required…My recommendation is to define a default method for padding fragments when no timed text…is available. This way it will be more explicit for media presentations with timed text or subtitles to comply.

## tfhd duration-is-empty

Wouldn't the flag duration-is-empty in tfhd fits this? This would avoid inserting blank samples which would need removal when de-fragmenting the file. But this is not supported (or not supported consistently) today in players.

## EBU Tech 3381 empty document

EBU Tech 3381 suggests: <tt xml:lang="" xmls="http://www.w3.org/ns/ttml"/>