

EBU Webinar



# EBU-DFXP

Subtitling in XML/MXF

Larissa Görner



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Twinkle, twinkle, little bat!  
How I wonder where you're at!

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# WHY EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

- higher resolution and further improved presentation possibilities
- file-based workflows
- web-subtitling

Are design and transport still up to date?



# WHY EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Current status

- many exchange formats and mechanisms
  - STL, VBI-VANC problematic, proprietary formats
- migration to file-based workflows
- media conversion problems
- limited creative freedom (colors, fonts, positioning)
- no Web-TV support



# WHAT IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## EBU-DFXP general overview

- follow-up of EBU STL (Tech. 3246)
- based on the DFXP-profile of the W3C Timed Text Markup Language
- W3C Recommendation for time-related text media
- specified for interchange among distribution formats and authoring systems

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:ttml="http://www.w3.org/ns/ttml#metadata"
xmlns:styling="http://www.w3.org/ns/ttml#styling"
xmlns:layout="http://www.w3.org/ns/ttml#layout" />
<head>
  <metadata>
    <ttml:title/>
    <ttml:desc/>
  </metadata>
  <styling>
    <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
    <style xml:id="s2" tts:opacity="0.7" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
    <style xml:id="s3" tts:opacity="0.7" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
  </styling>
  <layout>
    <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
    <region xml:id="overlay" tts:textAlign="center" tts:origin="20px 480px" tts:extent="760px 100px" tts:padding="10px"/>
    <region xml:id="interview" tts:textAlign="right" tts:origin="20px 280px" tts:extent="760px 100px"/>
  </layout>
</head>
<body>
  <div region="overlay" style="s2">
    <p xml:id="subtitle1" begin="00:00:00.100" end="00:00:02.800">Another great season is expected, </p>
    <p xml:id="subtitle2" begin="00:00:02.900" end="00:00:04.500">but there's a warning:</p>
    <p xml:id="subtitle3" begin="00:00:04.600" end="00:00:08.600">Going off piste<br/>Could be extremely dangerous.</p>
    <p xml:id="subtitle4" begin="00:00:8.700" end="00:00:12.800">Here at <span tts:fontStyle="italic">Cairngorm Mountain </span> the slopes <br/>
      have been open since the end of November. </p>
    <p xml:id="subtitle5" begin="00:00:13.100" end="00:00:17.100">The skiers are arriving in the<br/>
      resorts at record numbers.</p>
  </div>
</body>
</tt>
```



# WHAT IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## EBU-DFXP KEY features (1)

- offers more creative freedom compared to legacy formats

- is XML-based

- supported within HTML5 video

- can be transported in MXF (ECI-HIPS-MXF)

- supports the use of subtitles in the web

- can be easily handled by content management systems

- is already implemented in most subtitling systems (export)

- can be easily converted from other formats

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
  xmlns:tts="http://www.w3.org/ns/ttml#metadata"
  xmlns:styling="http://www.w3.org/ns/ttml#styling"
  xmlns:layout="http://www.w3.org/ns/ttml#layout" >
  <head>
    <metadata>
      <ttml:title/>
      <ttml:copyright/>
    </metadata>
    <styling>
      <style xml:id="s1" tts:backgroundColor="transparent"
        tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
      <style xml:id="s2" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
      <style xml:id="s3" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
    </styling>
    <layout>
      <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
      <region xml:id="overlay" tts:textAlign="center" tts:origin="20px 48px" tts:extent="760px 100px" tts:padding="10px"/>
    </layout>
  </head>
  <body>
    <div region="overlay" style="s2">
      <p xml:id="subtitle1" begin="00:00:00.000" end="00:00:04.000">The skiers are arriving in the<br/>
      <p xml:id="subtitle2" begin="00:00:04.000" end="00:00:08.000">The skiers are arriving in the<br/>
      <p xml:id="subtitle3" begin="00:00:04.600" end="00:00:08.600">Going off piste<br/>Could be extremely dangerous.</p>
      <p xml:id="subtitle4" begin="00:00:8.700" end="00:00:12.800">Here at <span tts:fontStyle="italic">Cairngorm Mountain</span> the slopes <br/>
      have been open since the end of November. </p>
      <p xml:id="main" begin="00:00:12.800" end="00:00:12.800">The skiers are arriving in the<br/>
      </p>
    </div>
  </body>
</tt>
```



# WHAT IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## EBU-DFXP KEY features (2)

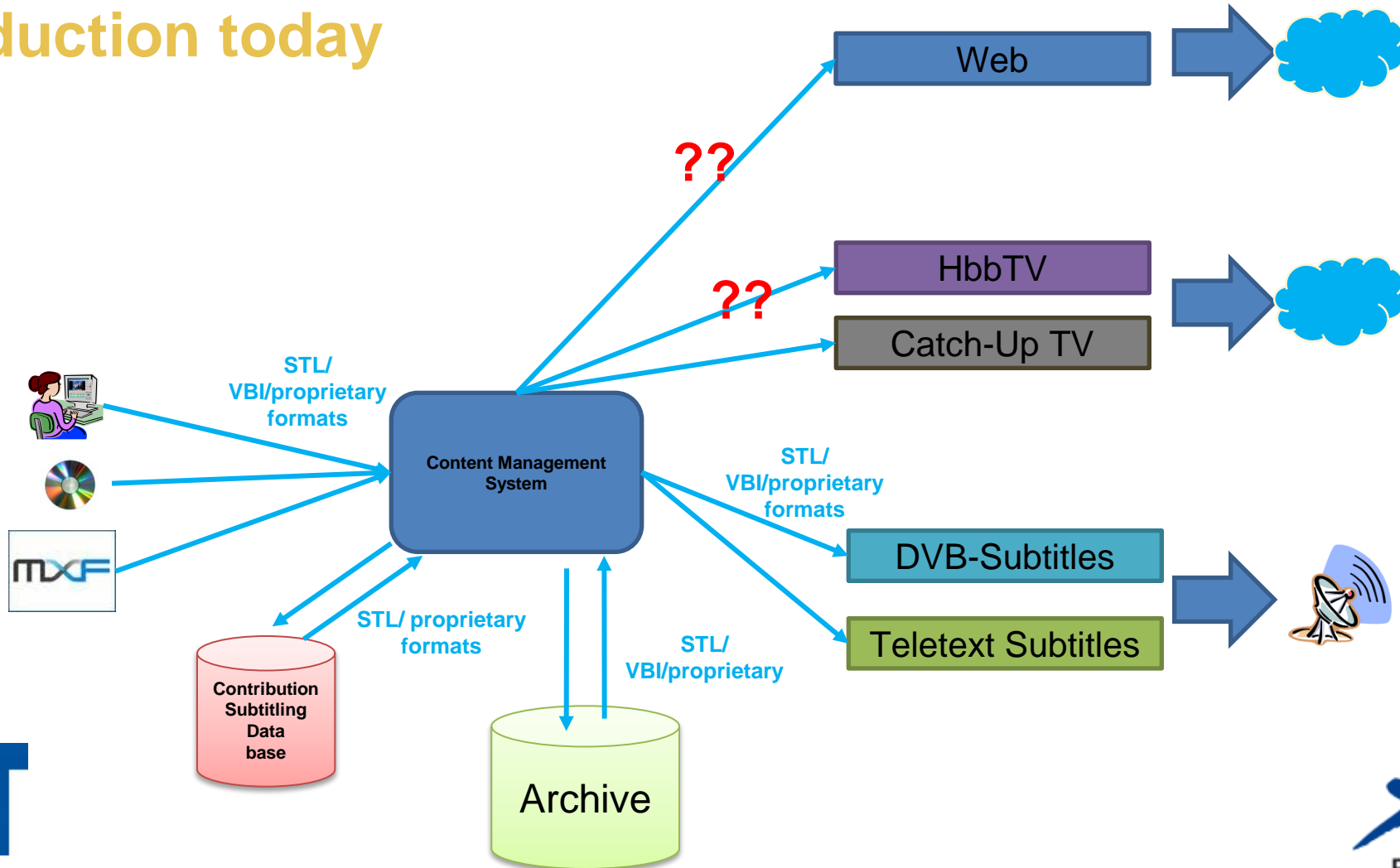
- Unicode support
  - possibility to present special characters (e.g. music notes)
- usage of the generated subtitles on different platforms (e.g. IP-TV, Mediatheken)
- possibility to generate Metadata (who is speaking?)
- positioning of subtitles over the whole picture area
- bold, italic and underline text support
- STL tunneling transport



# WHERE IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Production today

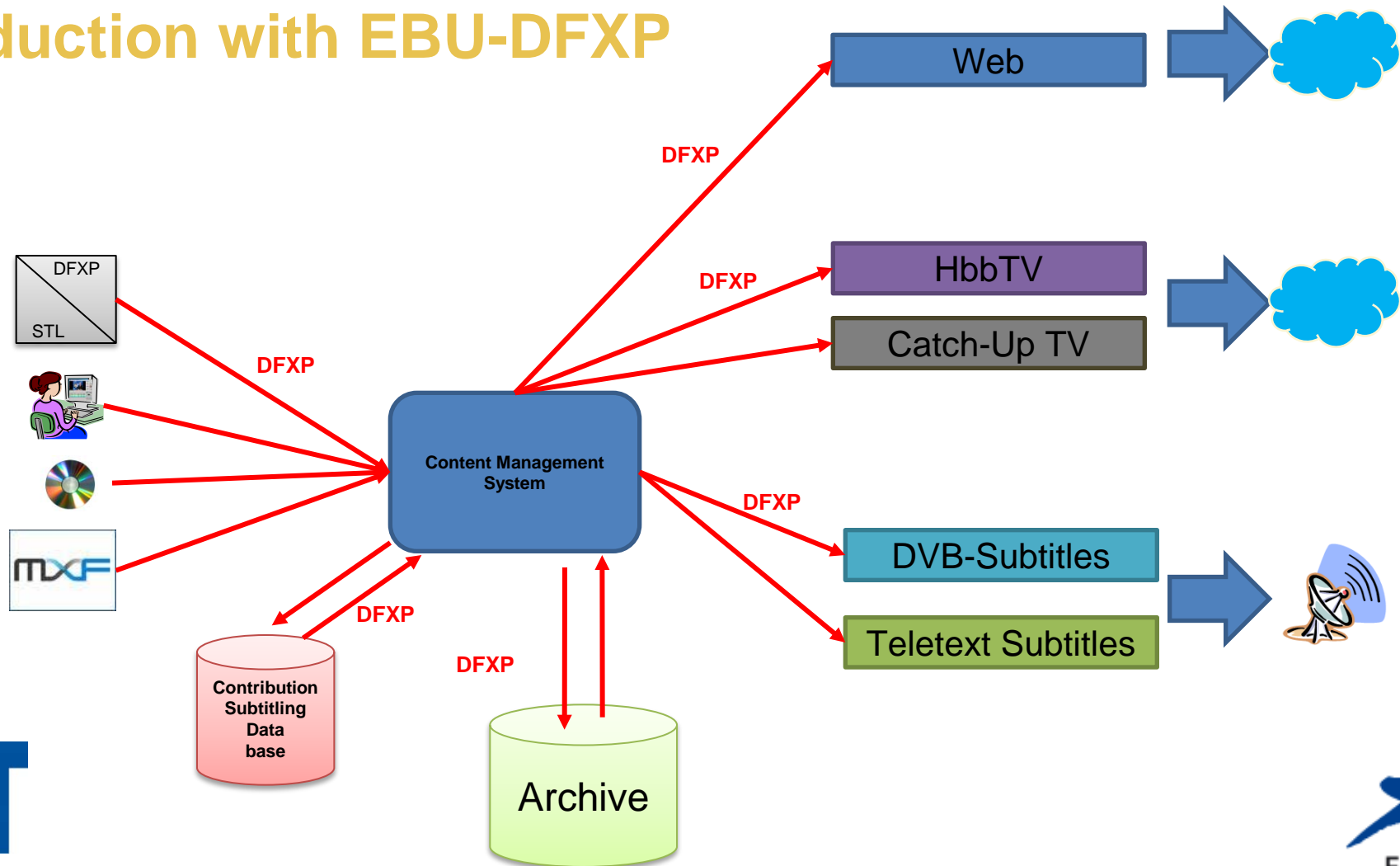




# WHERE IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Production with EBU-DFXP



# WHERE IS EBU-DFXP?

The screenshot shows a video player interface from ZDFmediathek. The video content depicts a woman in a light blue shirt and dark skirt standing in a room, looking at a leopard-print garment hanging in a wardrobe. In the foreground, there is a large black vase filled with white flowers. The video player includes a progress bar at the bottom, a search bar at the top right, and a navigation menu at the top. The subtitle at the bottom of the video reads: "Ihr Enkel rief an und fragte, ob ich früher kommen kann."

© ZDF Mediathek



# WHERE IS EBU-DFXP?



© ARD Mediathek



# WHERE IS EBU-DFXP ?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Player software

- Adobe CS4
- HTML5 DFXP Player prototype
- CC for Flash component
- JW FLV Media Player
- NCAM ccPlayer
- Microsoft Silverlight

## Authoring software

- Annotation Edit
- Caption Colorado
- Caption Wrap
- Captionate
- CaptionSync
- CPC
- Screen Subtitling
- Softel Swift
- Subtitle-horse
- FAB Broadcast (only Export)

## For further informations:

[http://www.adobe.com/accessibility/products/flash/captioning\\_tools.html](http://www.adobe.com/accessibility/products/flash/captioning_tools.html)



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

```
00001050h: 00 0E 00 FE 00 00 02 3B 05 00 03 02 08 14 02 00 : ...b.....
00001060h: 46 41 42 73 74 04 01 0F 00 08 06 FF FF 1B 00 00 : FABst.....ýý
00001070h: 00 5D 00 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : .].
00001080h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001090h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000010a0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000010b0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000010c0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F BE E4 : .....ka
000010d0h: 00 0E 00 FF 00 00 02 3B 05 00 03 02 08 14 02 00 : ...ý.....
000010e0h: 0D 06 20 20 20 20 20 20 20 20 0B 0B 44 69 65 20 4D : ... Die M
000010f0h: 61 6D 61 2C 20 64 61 73 20 45 73 73 65 6E 0A 0A : ama, das Essen.
00001100h: 8A 8A 0D 06 20 20 20 20 20 20 0B 0B 20 77 69 : ... wi
00001110h: 72 64 20 66 65 72 74 69 67 20 73 65 69 6E 2E 20 : rd fertig sein.
00001120h: 0A 0A 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001130h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001140h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001150h: 00 0F 00 FE 00 00 03 02 10 00 03 03 14 17 02 00 : ...b.....
00001160h: 46 41 42 73 74 04 01 10 00 08 06 FF FF 1B 00 00 : FABst.....ýý
00001170h: 00 5D 00 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : .].
00001180h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001190h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000011a0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000011b0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000011c0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F A1 00 : .....i
000011d0h: 00 0F 00 FF 00 00 03 02 10 00 03 03 14 17 02 00 : ...ý.....
000011e0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000011f0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001200h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001210h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001220h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001230h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001240h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001250h: 00 10 00 FE 00 00 03 07 02 00 03 0A 02 16 02 00 : ...b.....
00001260h: 46 41 42 73 74 04 01 11 00 08 06 FF FF 1B 00 00 : FABst.....ýý
00001270h: 00 5D 00 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : .].
00001280h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001290h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000012a0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000012b0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000012c0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F A0 00 : .....
000012d0h: 00 10 00 FF 00 00 03 07 02 00 03 0A 02 16 02 00 : ...ý.....
000012e0h: 0D 06 0B 0B 53 6F 6C 6C 65 6E 20 77 69 72 20 7A : ... Sollen wir z
000012f0h: 75 6D 20 48 C8 61 63 6B 73 6C 65 72 20 73 63 68 : um HÆacksler sch
00001300h: 61 75 65 6E 3F 0A 0A 8F 8F 8F 8F 8F 8F 8F 8F 8F : auen?.....
00001310h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001320h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001330h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001340h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001350h: 00 11 00 FE 00 00 03 10 08 00 03 12 09 16 02 00 : ...b.....
00001360h: 46 41 42 73 74 04 01 12 00 08 06 FF FF 1B 00 00 : FABst.....ýý
00001370h: 00 5D 00 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : .].
00001380h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
00001390h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000013a0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000013b0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F : 
000013c0h: 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F 8F A3 FC : .....fü
000013d0h: 00 11 00 FF 00 00 03 10 08 00 03 12 09 16 02 00 : ...ý.....
000013e0h: 0D 05 20 20 20 0B 0B 53 69 65 20 73 69 6E 64 20 : ... Sie sind
000013f0h: 6A 65 74 7A 74 20 69 6D 20 41 75 73 74 72 61 67 : jetzt im Austrag
```



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:ttml="http://www.w3.org/ns/ttml#metadata"
xmlns:tts="http://www.w3.org/ns/ttml#styling"
xmlns:ttp="http://www.w3.org/ns/ttml#parameter" >
<head>
  <metadata>
    <ebuttm:title/>
    <ebuttm:CreationDate/>
    <ebuttm:copyright>Copyright (C) ...</ebuttm:copyright>
  </metadata>
  <styling>
    <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
    <style xml:id="s2" tts:opacity="0.7" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
    <style xml:id="s3" tts:opacity="0.7" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
  </styling>
  <layout>
    <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
    <region xml:id="overlay" tts:textAlign="center" tts:origin="20px 480px" tts:extent="760px 100px" tts:padding="10px"/>
    <region xml:id="interview" tts:textAlign="right" tts:origin="20px 280px" tts:extent="760px 100px"/>
  </layout>
</head>
<body>
  <div region="overlay" style="s2">
    <p xml:id="subtitle1" begin="00:00:00.100" end="00:00:02.800">Another great season is expected, </p>
    <p xml:id="subtitle2" begin="00:00:02.900" end="00:00:04.500">but there's a warning:</p>
    <p xml:id="subtitle3" begin="00:00:04.600" end="00:00:08.600">Going off piste<br/>Could be extremely dangerous.</p>
    <p xml:id="subtitle4" begin="00:00:8.700" end="00:00:12.800">Here at <span tts:fontStyle="italic">Cairngorm Mountain </span>
the slopes <br/>have been open since the end of November. </p>
    <p xml:id="subtitle5" begin="00:00:13.100" end="00:00:17.100">The skiers are arriving in the<br/>
resorts at record numbers.</p>
  </div>
</body>
</tt>
```



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## EBU-DFXP XML-file structure

- extensions with an EBU-Namespace (name under discussion)

- head and body part

- metadata is fully taken from STL

- subtitles carry increasing number

- Start- and End-Timecode is provided

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:tts="http://www.w3.org/ns/ttml#metadata"
xmlns:sty="http://www.w3.org/ns/ttml#styling"
xmlns:ttm="http://www.w3.org/ns/ttml#metadata" >
<head>
  <metadata>
    <ttm:title/>
    <ttm:desc/>
    <ttm:copyright/>
  </metadata>
  <styling>
    <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
    <style xml:id="s2" tts:textAlign="center" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
    <style xml:id="s3" tts:textAlign="center" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
  </styling>
  <layout>
    <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
    <region xml:id="overlay" tts:textAlign="center" tts:origin="20px 480px" tts:extent="760px 100px" tts:padding="10px"/>
    <region xml:id="interview" tts:textAlign="right" tts:origin="20px 280px" tts:extent="760px 100px"/>
  </layout>
</head>
<body>
  <div region="overlay" style="s2">
    <p xml:id="subtitle1" begin="00:00:00.100" end="00:00:02.800">Another great season is expected, </p>
    <p xml:id="subtitle2" begin="00:00:02.900" end="00:00:04.500">but there's a warning:</p>
    <p xml:id="subtitle3" begin="00:00:04.600" end="00:00:08.600">Going off piste<br/>Could be extremely dangerous.</p>
    <p xml:id="subtitle4" begin="00:00:8.700" end="00:00:12.800">Here at <span tts:fontStyle="italic">Cairngorm Mountain </span> the slopes <br/>
have been open since the end of November. </p>
    <p xml:id="subtitle5" begin="00:00:13.100" end="00:00:17.100">The skiers are arriving in the<br/>
resorts at record numbers.</p>
  </div>
</body>
</tt>
```



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Head

- Metadata

- e.g. CreationDate, NumberOfSubtitles, StartOfProgramm...

- taken from STL

- Styling and Layout

- styling and layout are defined in the head

- styling and layout constraints of W3C TTML

- only reference to style and layout in the body part

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
  xmlns:ttm="http://www.w3.org/ns/ttml#metadata"
  xmlns:stl="http://www.w3.org/ns/ttml#styling"
  xmlns:sl="http://www.w3.org/ns/ttml#parameter" >
  <head>
    <metadata>
      <ttm:title/>
      <ttm:desc/>
      <ttm:copyright>Copyright (C) ....</ttm:copyright>
    </metadata>
    <styling>
      <style xml:id="s1" tts:backgroundColor="transparent"
        tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
      <style xml:id="s2" tts:fontSize="7pt" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
      <style xml:id="s3" tts:fontSize="7pt" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
    </styling>
    <layout>
      <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
      <region xml:id="caption" tts:textAlign="center" tts:origin="50px 460px" tts:extent="760px 100px" tts:padding="10px"/>
      <region xml:id="caption2" tts:textAlign="center" tts:origin="50px 460px" tts:extent="760px 100px"/>
    </layout>
  </head>
  <body>
    <div region="overlay" style="s2">
      <p xml:id="subtitle1" begin="00:00:00.000" end="00:00:02.100">A little birdie in the sky</p>
      <p xml:id="subtitle2" begin="00:00:04.000" end="00:00:05.500">but there's something up!
```

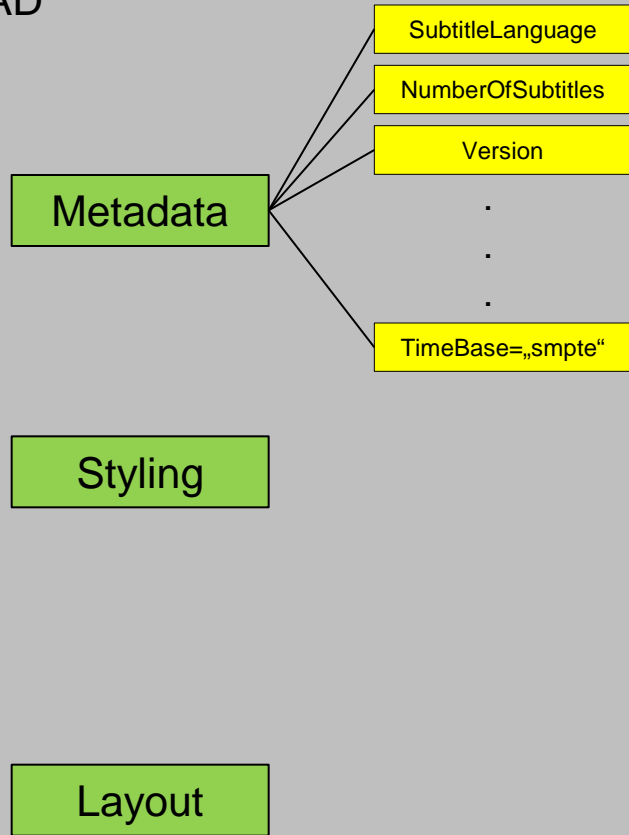




# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

HEAD



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Body

- logical containers and temporal structuring elements

- division: for subtitle blocks

- paragraph

- span

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:ttm="http://www.w3.org/ns/ttml#metadata"
xmlns:tts="http://www.w3.org/ns/ttml#styling"
xmlns:ttp="http://www.w3.org/ns/ttml#parameter" >
<head>
  <metadata>
    <ttm:title/>
    <ttm:desc/>
    <ttm:copyright>Copyright (C) ...</ttm:copyright>
  </metadata>
  <styling>
    <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
    <style xml:id="s2" tts:opacity="0.7" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
    <style xml:id="s3" tts:opacity="0.7" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
  </styling>

```

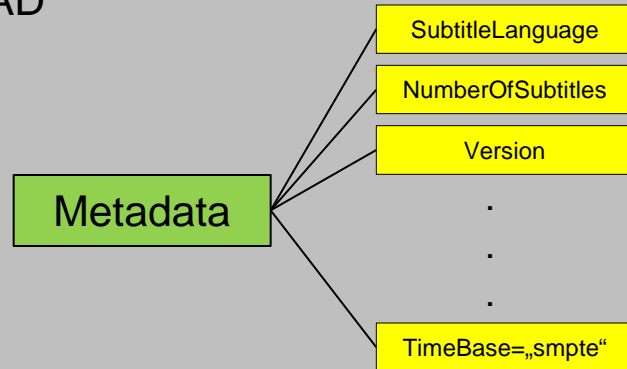
```
<body>
  <div>
    <p xml:id="subtitle1" begin="00:00:00:12" end="00:00:02:22">
      Another great season is expected, </p>
    </div>
</body>
```



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

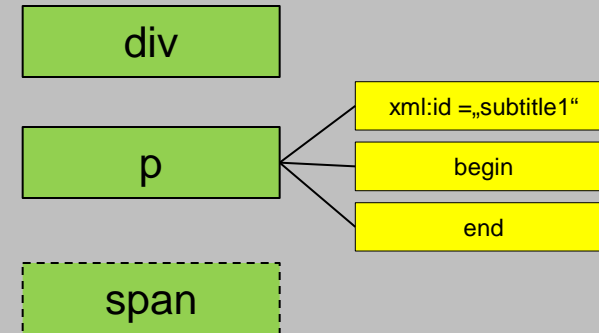
## HEAD



Styling

Layout

## BODY



```
<body>
  <div>
    <p xml:id="subtitle1" begin="00:00:00:12"end="00:00:02:22">
      Another great season is expected, </p>
    </div>
  </body>
```



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## Styling and Layout

- use of Styling and Layout is not mandatory

- use of templates

- styling and layout constraints of W3C TTML

- styling and layout are defined in the head

- only reference to style and layout in the body part

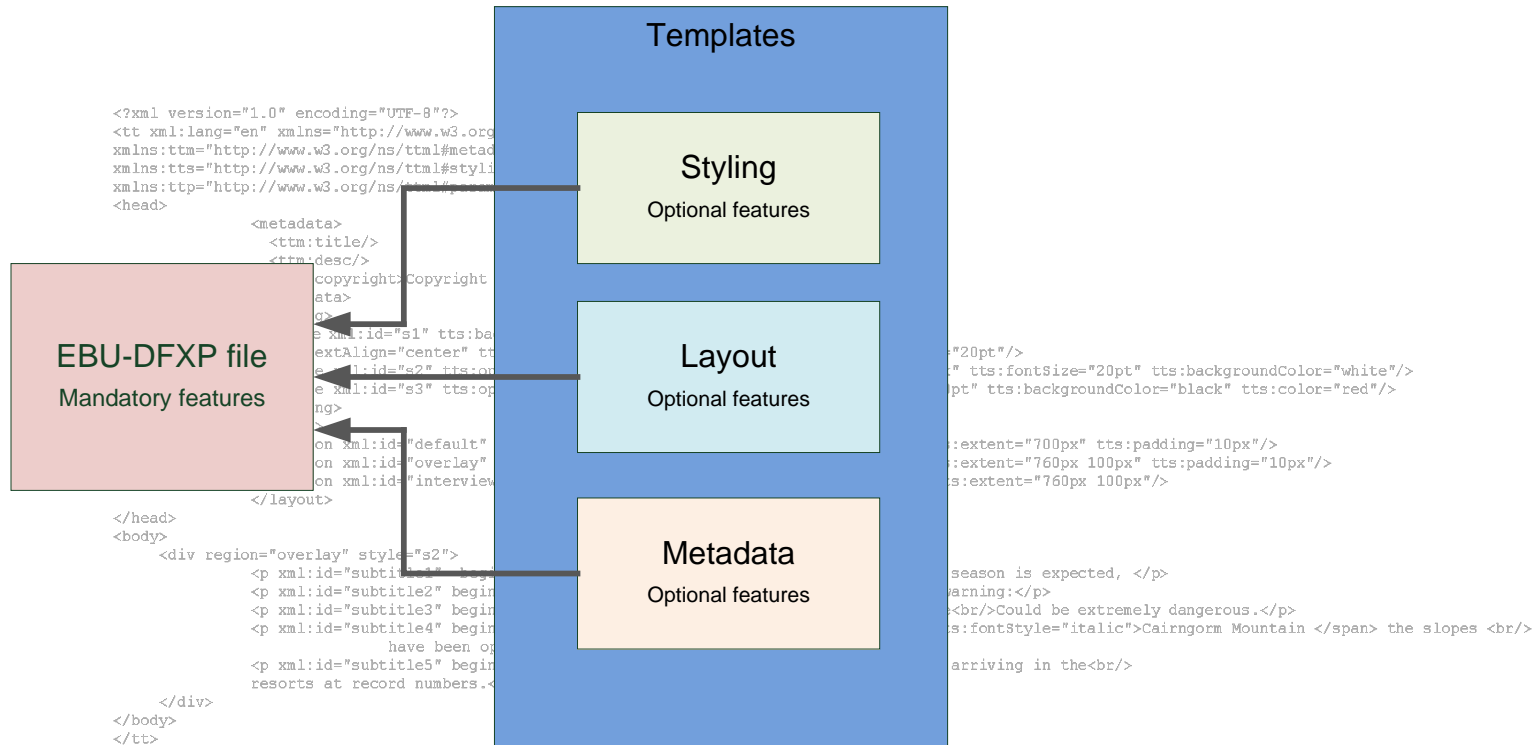
```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:tts="http://www.w3.org/ns/ttml#metadata"
xmlns:sty="http://www.w3.org/ns/ttml#styling"
xmlns:lay="http://www.w3.org/ns/ttml#layout" >
  <head>
    <metadata>
      <ttml:title/>
      <ttml:desc/>
    </metadata>
    <styling>
      <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
      <style xml:id="s2" tts:background-color="white"
tts:text-align="center" tts:font-size="20pt"
tts:font-style="italic" tts:font-weight="bold"
tts:background-color="black" tts:color="red"/>
    </styling>
    <layout>
      <region xml:id="default" tts:textAlign="center"
tts:origin="50px 460px" tts:extent="700px"
tts:padding="10px"/>
      <region xml:id="overlay" tts:textAlign="center"
tts:origin="20px 480px" tts:extent="760px 100px"
tts:padding="10px"/>
      <region xml:id="interview" tts:textAlign="right"
tts:origin="20px 280px" tts:extent="760px 100px"/>
    </layout>
  </head>
  <body>
    <div region="overlay" style="s2">
      <p xml:id="subtitle1" begin="00:00:00.100" end="00:00:02.800">Another great season is expected, </p>
      <p xml:id="subtitle2" begin="00:00:02.900" end="00:00:04.500">but there's a warning:</p>
      <p xml:id="subtitle3" begin="00:00:04.600" end="00:00:08.600">Going off piste<br/>Could be extremely dangerous.</p>
      <p xml:id="subtitle4" begin="00:00:8.700" end="00:00:12.800">Here at <span tts:fontStyle="italic">Cairngorm Mountain </span> the slopes <br/>
      have been open since the end of November. </p>
      <p xml:id="subtitle5" begin="00:00:13.100" end="00:00:17.100">The skiers are arriving in the<br/>
      resorts at record numbers.</p>
    </div>
  </body>
</tt>
```



# HOW IS EBU-DFXP?

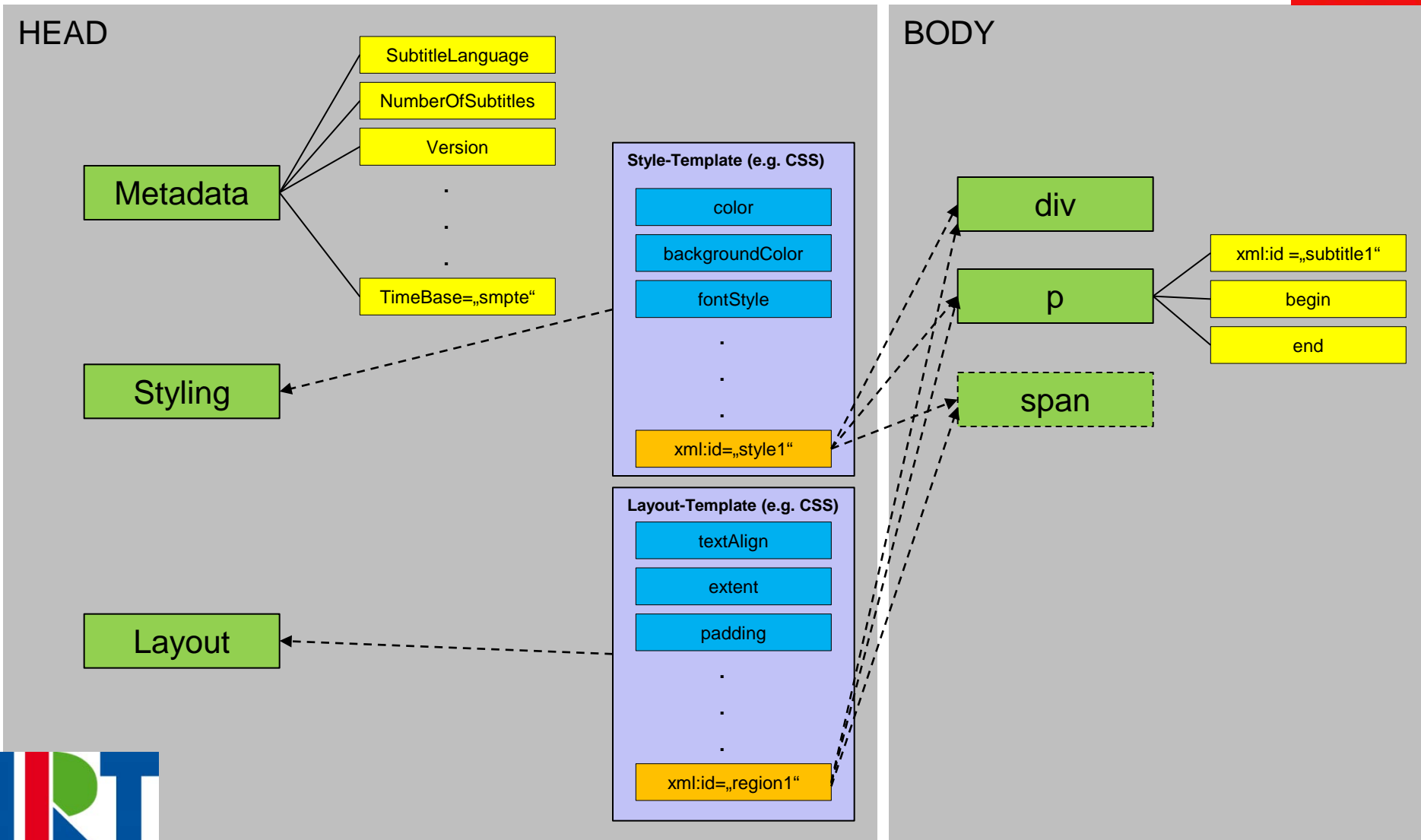
Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Use of templates (overview)



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:ttml="http://www.w3.org/ns/ttml#metadata"
xmlns:tts="http://www.w3.org/ns/ttml#styling"
xmlns:ttp="http://www.w3.org/ns/ttml#parameter" >
<head>
  <metadata>
    <ebuttm:title/>
    <ebuttm:CreationDate/>
    <ebuttm:copyright>Copyright (C) ...</ebuttm:copyright>
  </metadata>
  <styling>
    <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
    <style xml:id="s2" tts:opacity="0.7" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
    <style xml:id="s3" tts:opacity="0.7" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
  </styling>
  <layout>
    <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
    <region xml:id="overlay" tts:textAlign="center" tts:origin="20px 480px" tts:extent="760px 100px" tts:padding="10px"/>
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  </layout>
</head>
<body>
  <div region="overlay" style="s2">
    <p xml:id="subtitle1" begin="00:00:00.100" end="00:00:02.800">Another great season is expected, </p>
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the slopes <br/>have been open since the end of November. </p>
    <p xml:id="subtitle5" begin="00:00:13.100" end="00:00:17.100">The skiers are arriving in the<br/>
resorts at record numbers.</p>
  </div>
</body>
</tt>
```



# HOW IS EBU-DFXP?

Twinkle, twinkle, little bat!  
How I wonder where you're at!

## Checking EBU-DFXP as live-subtitling format

- replacing current formats (e.g. Nufor)
- creating a “Mini-EBU-DFXP”
- time for change because of many proprietary formats
- possibility to create a complete subtitling instance at the end

```
<?xml version="1.0" encoding="UTF-8"?>
<tt xml:lang="en" xmlns="http://www.w3.org/ns/ttml"
xmlns:tts="http://www.w3.org/ns/ttml#metadata"
xmlns:sty="http://www.w3.org/ns/ttml#styling"
xmlns:layout="http://www.w3.org/ns/ttml#layout">
  <head>
    <metadata>
      <ttml:title/>
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    </metadata>
    <styling>
      <style xml:id="s1" tts:backgroundColor="transparent"
tts:textAlign="center" tts:extent="9ex 4em" tts:color="white" tts:fontSize="20pt"/>
      <style xml:id="s2" tts:opacity="0.7" tts:fontWeight="bold" tts:color="black" tts:fontSize="20pt" tts:backgroundColor="white"/>
      <style xml:id="s3" tts:opacity="0.7" tts:fontWeight="bold" tts:fontSize="20pt" tts:backgroundColor="black" tts:color="red"/>
    </styling>
    <layout>
      <region xml:id="default" tts:textAlign="center" tts:origin="50px 460px" tts:extent="700px" tts:padding="10px"/>
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      have been open since the end of November. </p>
      <p xml:id="subtitle5" begin="00:00:13.100" end="00:00:17.100">The skiers are arriving in the<br/>
      resorts at record numbers.</p>
    </div>
  </body>
</tt>
```







# WHY AGAIN EBU-DFXP?

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How I wonder where you're at!

## SMPTE-TT

- also based on W3C TTML
- created for the US market
- play-out oriented on CEA-608

## WebVTT (former WebSRT)

- work still in progress
- not applicable for television as no support of positioning is provided

## EBU requirement:

- clear separation of content and styling

## Goal:

- usage on many different platforms
- long-term archiving format
- adaption of styling and layout with templates



# EBU-EC-I-DFXP ACTIVITIES

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## Current Status

- 40 members from cross-industry
  - broadcasters, users, manufacturers
- group investigates and supports the possibilities of new technical formats regarding creation and transport of time-synchronized subtitles
- requirements received from BBC, ARD, ZDF, Swiss-Txt, etc.
  - representation requirements
  - implementation requirements



# EBU-EC-I-DFXP ACTIVITIES

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## Meeting in January 2011

- requirements check
- discussions on metadata and styling

## Next meeting in April

- final discussions on styling, layout and implementation
- requirements check for EBU-DFXP as live subtitling format



# EBU-EC-I-DFXP ACTIVITIES

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## Next Steps

- create a broadcast subset/superset from the W3C DFXP Profile
- create a new EBU recommendation for a subtitling format succeeding legacy STL
- harmonization with current implementations and other standardization organizations -> SMPTE-TT liaison



# EBU-EC-I-DFXP ACTIVITIES

---

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## Informations

- <http://tech.ebu.ch/groups/pdfxp>
- Email to: [goerner@irt.de](mailto:goerner@irt.de)





## EBU Webinar



**Thank you**

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