

Proposal on Multiview High Profile (JVT-AB035)

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Objectives

Present our target applications and comments on related requirements for Multiview High Profile

- Target applications
 - Panorama video and FTV / Free viewpoint video
 - Multi-view 3DTV
- Requirements for level definition
 - Number of views
- Comments on JD
 - Level Constrains

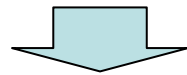
Target applications #1

- Interactive TV service
 - customized to user's preference, for the next telecommunication network
 - Panorama video (2011 -)
Viewing direction can be changed according to user's preference
 - FTV / Free viewpoint video (2013 -)
Viewing direction and **viewing position** can be changed according to user's preference

Panorama video



Panorama video

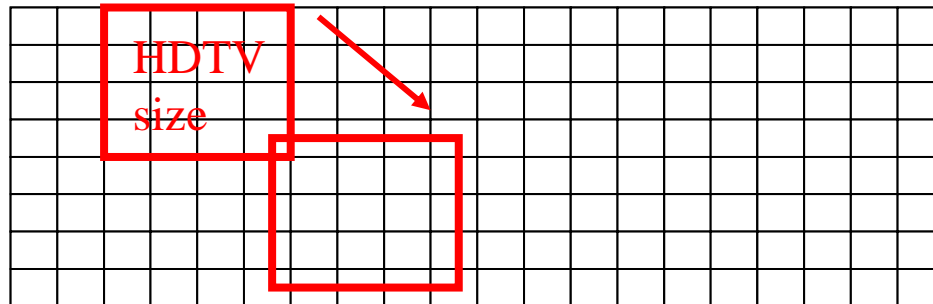


Acquisition

| | | | | | |
|------|--|--|--|--|--|
| HDTV | | | | | |
| | | | | | |

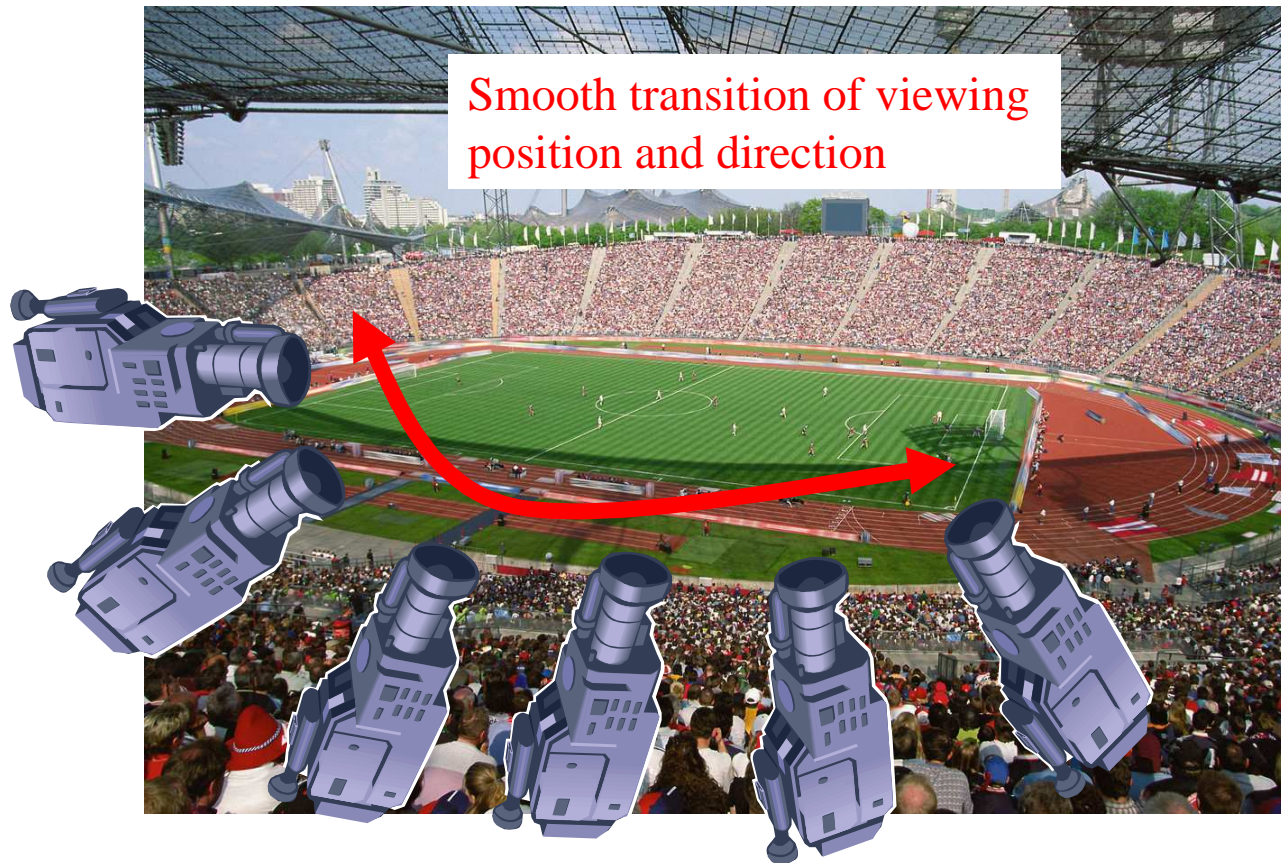


Tiling

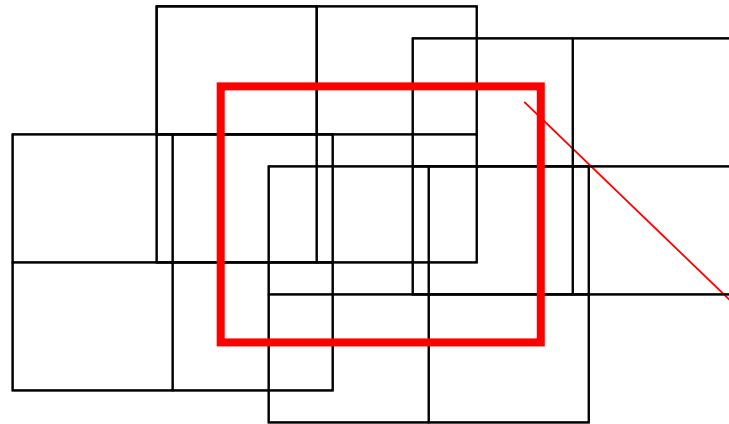


HDTV / 16 x 25 views
=
(480 x 270) x 25 pixel size
=
almost 1.5 HDTV size
should be decoded

FTV / Free viewpoint video



FTV / Free viewpoint video



HDTV / 4 x 16 views

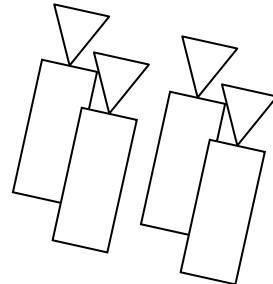
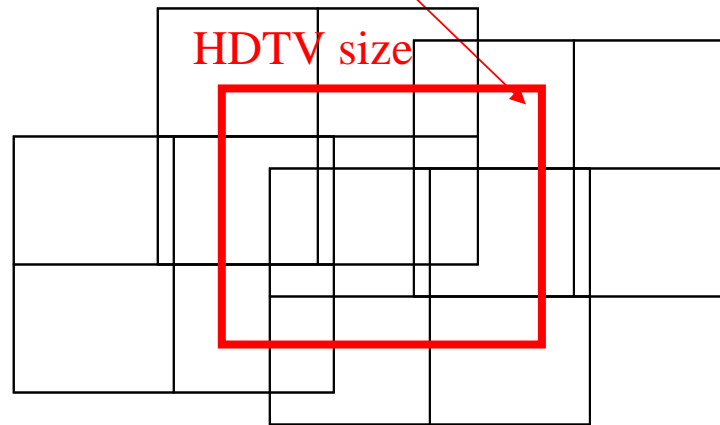
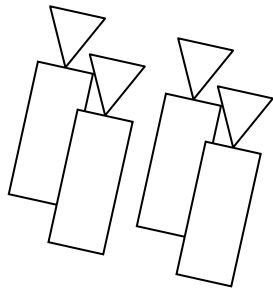
=

(960 x 540) x 16 pixel size

=

4 HDTV size

should be decoded



Target applications #2

- Multi-view 3DTV
 - 3DTV service (supported number of views is limited), for the next telecommunication network
 - Realistic 3DTV (2013 -)
Up to 16 views display

Multi-view 3DTV

HDTV / 16 x 16 views

=

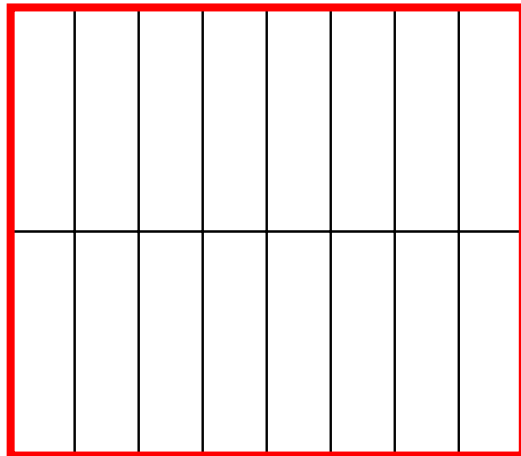
(240 x 540) x 16 pixel size

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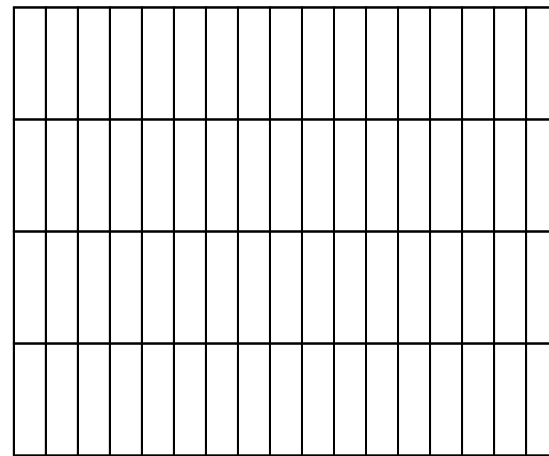
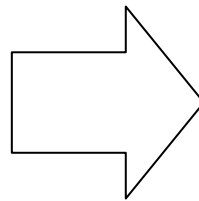
HDTV size

should be decoded

HDTV size



arrange
pixels to fit
display
capability



Requirements on the number of views

- Number of views to be decoded
 - 9 – 25 views for panorama video
 - 16 views for FTV / free viewpoint video
 - 16 views for 3DTV
- Limitation of 16 on max decoder frame buffering should be discussed carefully to support the proposed number of views.

Comments on level constrains #1 and #2

- #1 the value of num_views_minus1
 - In the H.7.4.2.1.4 Sequence parameter set MVC extension semantics, there is a NOTE 2 for num_views_minus1, as follows.
 - NOTE 2 - This value should be changed by the sub-bitstream extraction process as specified in subclause H.8.3 to correspond with the exact number of views in a bitstream subset.
 - Because NumViews affects the level constrains, the value of num_views_minus1 "shall" be changed by the sub-bitstream extraction process.
- #2 the value of level_idc
 - Do we allow changing the value of level_idc by the sub-bitstream extraction process?

Comments on level constrains #3 and #4

- #3 calculations in the a) and b) level constrains
 - There are calculations using mvcScaleFactor in a) and b) level constrains, as follows.
 - $\text{Max}(\text{NumViews} * \text{PicSizeInMbs} / \text{mvcScaleFactor} * \text{MaxMBPS}, fR)$
 - Does mvcScaleFactor apply to MaxMBPS?
 - If so, it should be corrected to
 - $\text{Max}(\text{NumViews} * \text{PicSizeInMbs} / (\text{mvcScaleFactor} * \text{MaxMBPS}), fR)$
- #4 calculations in the p) and q) level constrains
 - In the p) level constrain for VCL HRD parameters, NumViews is not multiplied for calculating BitRate[SchedSelIdx], however, in the q) level constrain for NAL HRD parameters, NumViews is multiplied for calculating BitRate[SchedSelIdx].
 - Clarification is needed if this is correct.

Conclusions

- We present our target applications and related requirements on the number of views and pixels for level constraints of Multiview High Profile.
- Limitation of 16 on max decoder frame buffering should be discussed carefully to support the proposed requirements
- Clarifications are necessary for level constraints
- We continue to support development of Multiview High Profile.