

M29739/JCTVC-N0116

RGB4:4:4 video coding using HEVC multi-view extensions

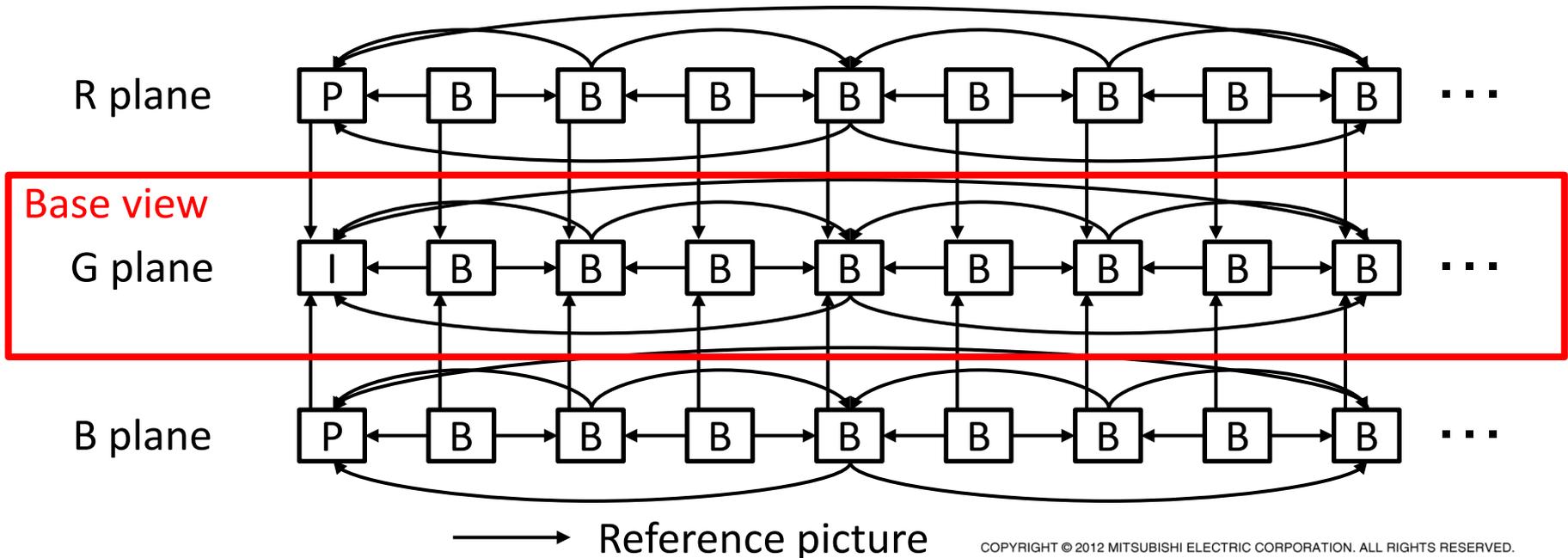
Akira Minezawa, Shun-ichi Sekiguchi,
Tokumichi Murakami

Mitsubishi Electric Corporation

- Presents a new RGB-domain coding architecture using HEVC multi-view extensions
 - Decompose RGB signal into three 4:0:0 views
 - Significant coding gain for RGB/screen contents only with inter prediction between G and R/B plane
- Could be seen as a technical evidence for coding of non-camera captured contents
 - Possibility of further coding gain
 - Affinity with multi-spectrum video/image sources

Proposed RGB coding

- The performance of direct RGB coding is better than that of YCbCr coding for high fidelity video coding (refer to m29738/JCTVC-N115)
- Propose a new architecture for RGB video coding by using MV-HEVC
 - Apply each color plane into a monochrome view source
 - G plane is used as one of reference pictures of inter prediction for corresponding R and B plane
- The proposed 4:4:4 coding requires no block-level changes from HEVC version 1 specification



- Test conditions

- Anchor: HM10.1_RExt3.0

- PSNR:
$$PSNR_{average} = \frac{PSNR_G + PSNR_B + PSNR_R}{3}$$

- Achieve 19.3% to 33.0% average BD-rate gains for screen contents

	All Intra		
	Main-tier	High-tier	Super High-tier
SC average	-33.0%	-29.8%	-26.9%
	Random Access		
	Main-tier	High-tier	Super High-tier
SC average	-28.3%	-25.5%	-23.0%
	Low Delay B		
	Main-tier	High-tier	Super High-tier
SC average	-22.9%	-20.9%	-19.3%