

CE5.h : Inter-view SAO Process in 3DV Coding (JCT3V-C0065)

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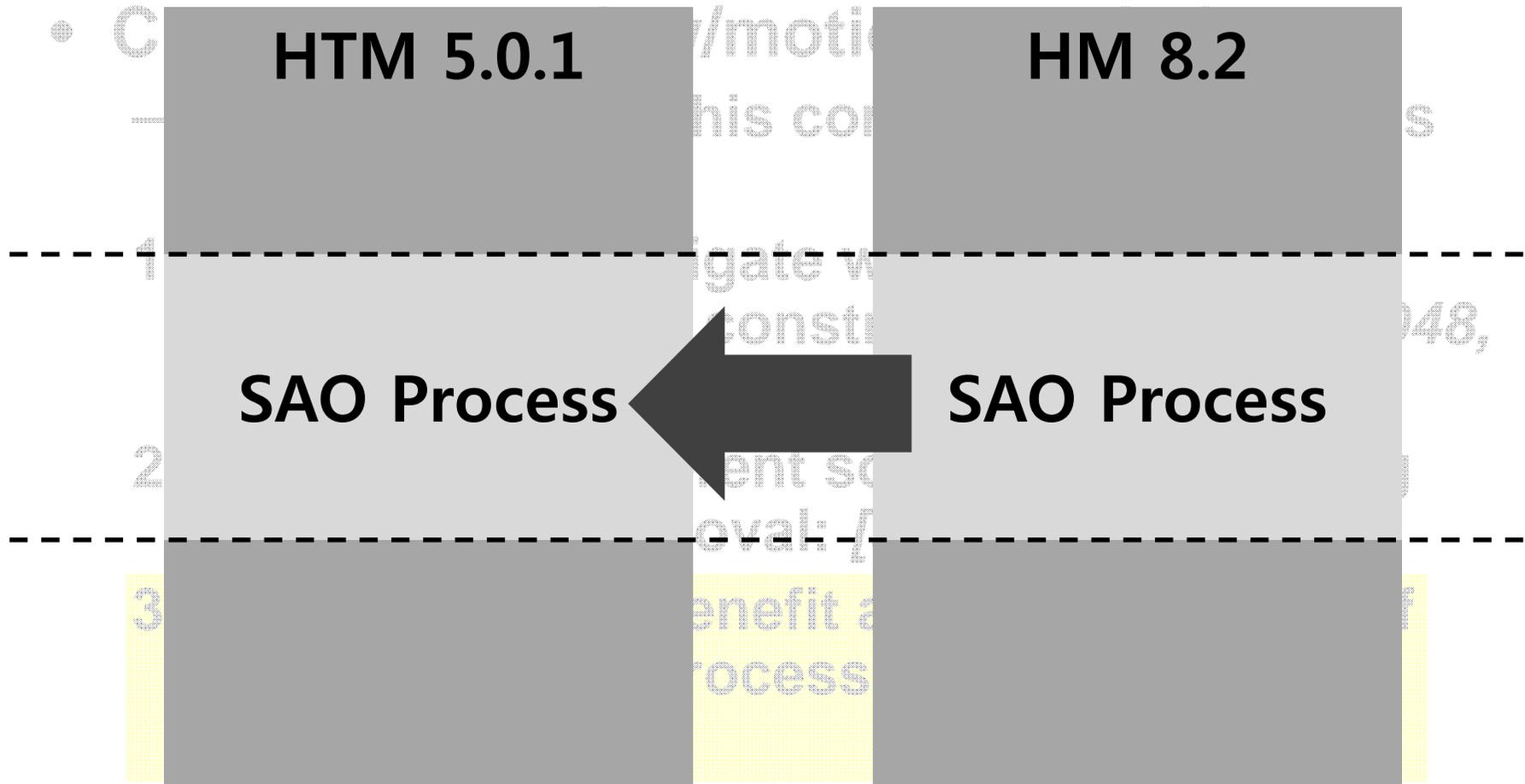
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Introduction

- **CE 5.h : Inter-view/motion prediction**
 - The mandates of this core experiment are as follows:
 1. To further investigate ways to improve AMVP/Merge list construction [*JCT3V-B0048, JCT3V-B0050, JCT3V-B0080*]
 2. To compare different solutions for parsing dependency removal: [*JCT3V-B0093*]
 3. To confirm the benefit and compatibility of Interview SAO Process to current HM: [*JCT3V-B0130*]

Introduction

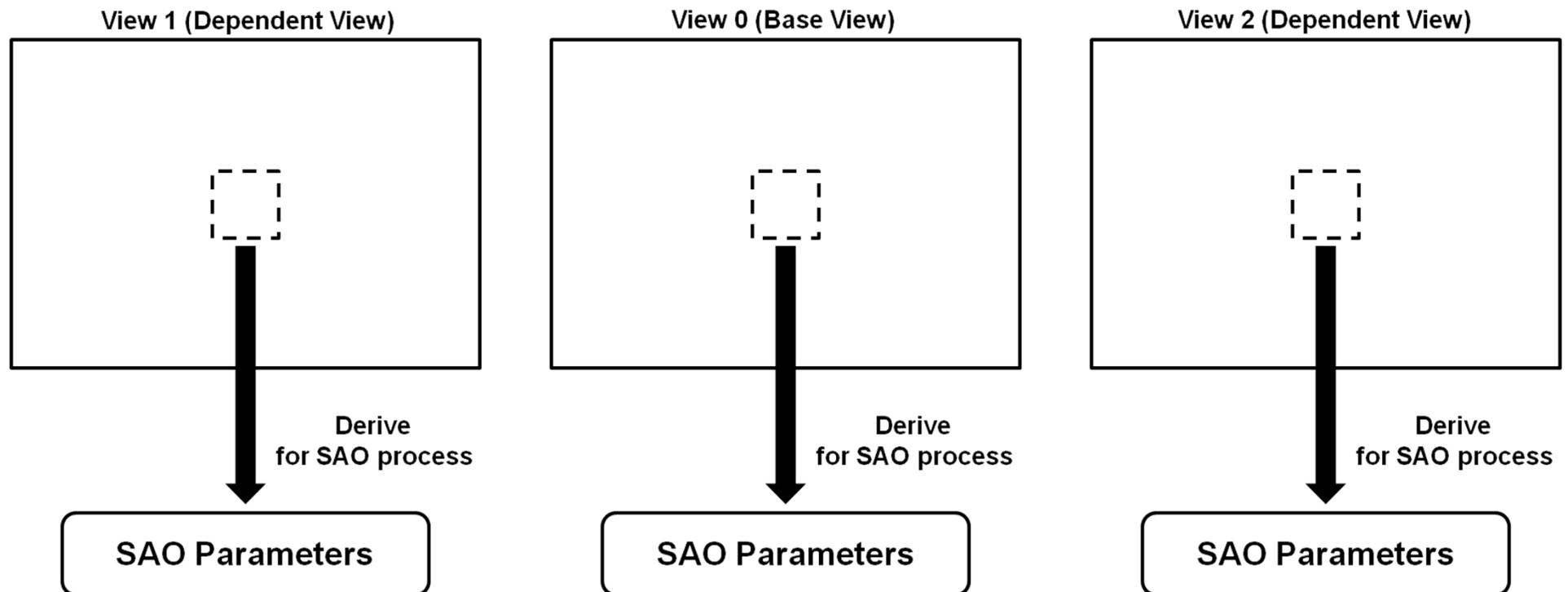


Introduction

- **SAO Process in Current HM**
 - LCU-based optimization (instead of picture-based)
 - Use statistical criterion of the previous frame to turned on/off SAO process (JCTVC-J0044).
 - Use a single merge flag to all color components (JCTVC-J0355).
 - No use of last four pixel rows in each LCU during SAO parameter estimation (JCTVC-H0273).

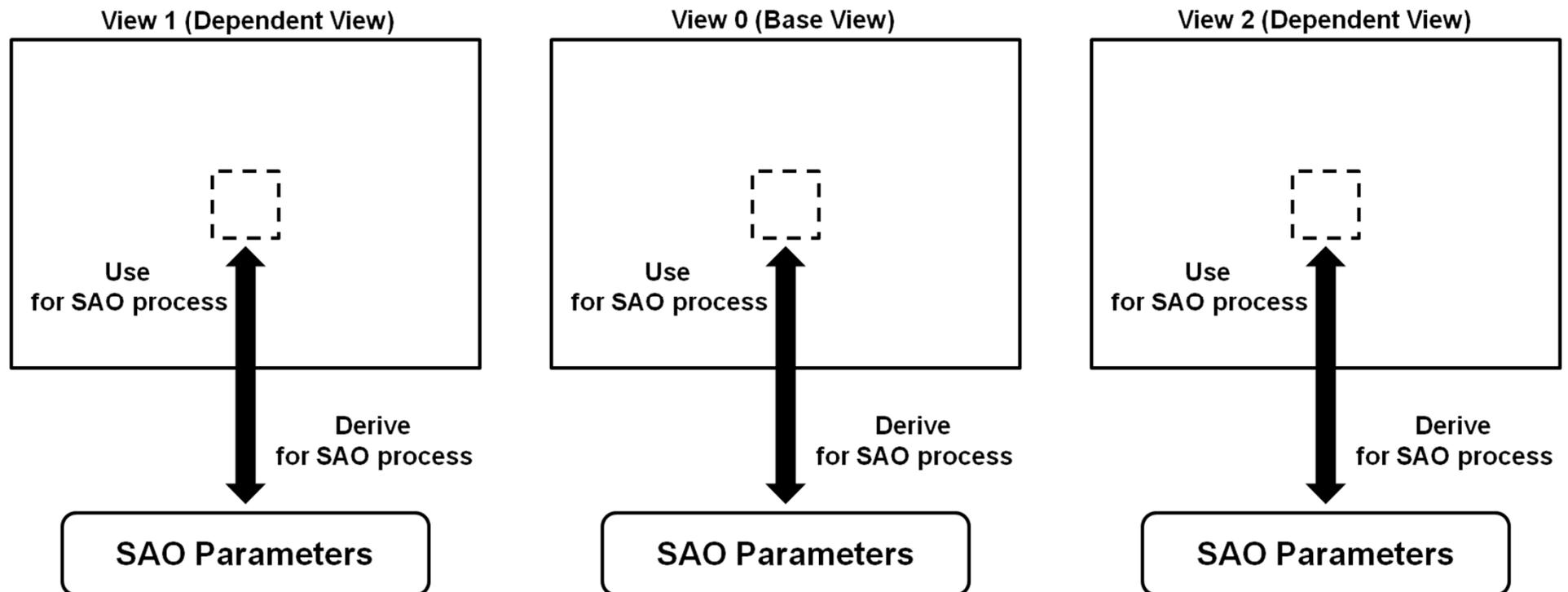
Introduction

- **SAO Process in 3DV Coding**



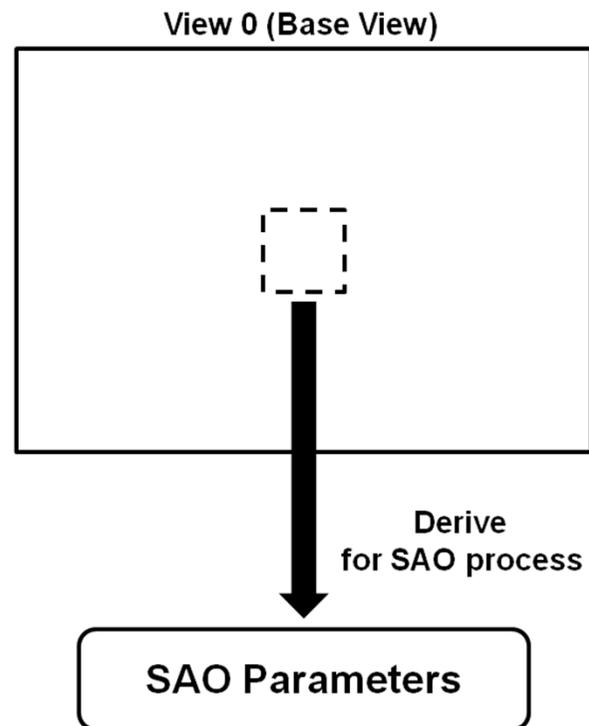
Introduction

- SAO Process in 3DV Coding



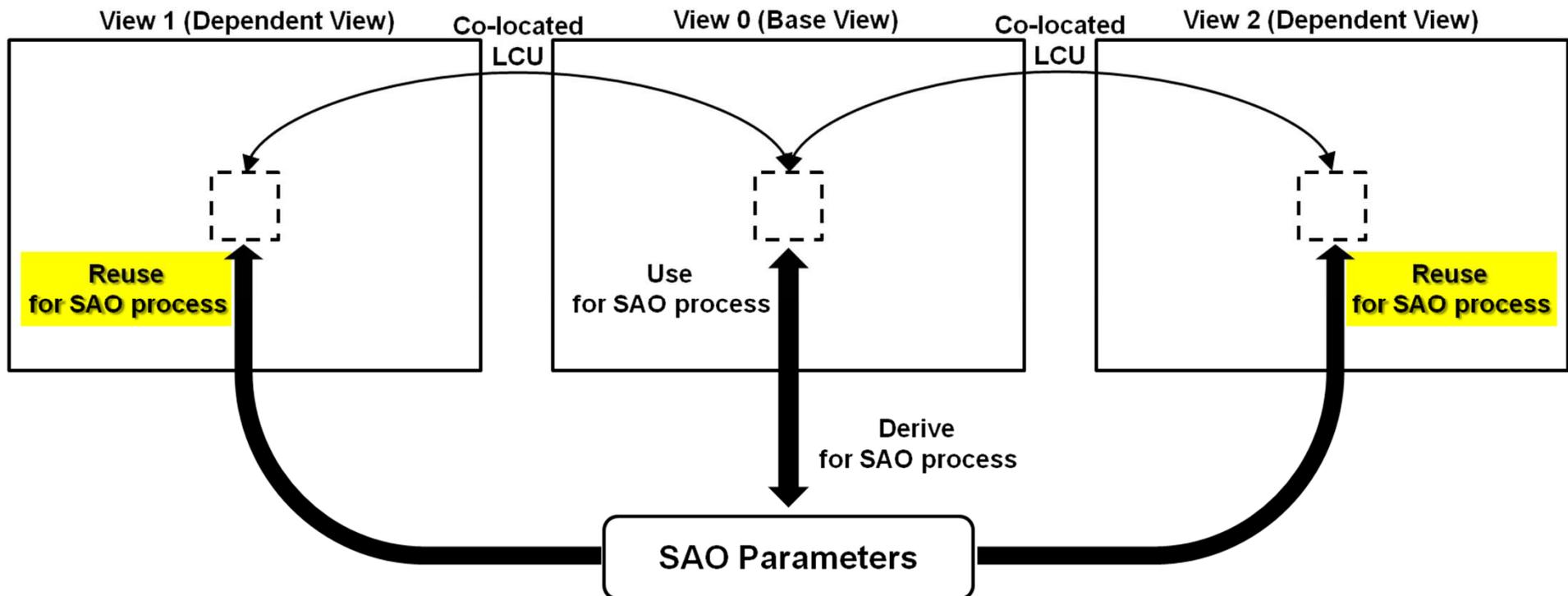
Proposed Method

- **Inter-view SAO Process**



Proposed Method

- Inter-view SAO Process



Proposed Method

- **Inter-view SAO Process**

- **No complexity impact on dependent views.**

- Removal of SAO parameter deriving process in encoder.
 - Reduction of parsing or deriving process in decoder.

- **No considerable memory issue.**

- Not release memory for derived SAO parameters,
 - or keep SAO parameters related bit-stream on buffer for dependent views.

Simulation Results

**Rate-distortion results of 'Inter-view SAO Process'
(Anchor : HTM 5.0.1 CTC + SAO Process in HM8.2)**

| | video 0 | video 1 | video 2 | video only | synthesized only | coded & synthesized |
|--------------|---------|---------|---------|------------|------------------|---------------------|
| Balloons | 0.0% | -0.9% | -0.7% | -0.2% | -0.3% | -0.2% |
| Kendo | 0.0% | -0.8% | -0.8% | -0.3% | -0.3% | -0.2% |
| Newspapercc | 0.0% | -0.8% | -0.4% | -0.1% | -0.2% | -0.1% |
| GhostTownFly | 0.0% | -1.6% | -1.4% | -0.2% | 0.1% | 0.0% |
| PoznanHall2 | 0.0% | -1.3% | -1.2% | -0.3% | -0.4% | -0.4% |
| PoznanStreet | 0.0% | -0.6% | -0.1% | 0.1% | 0.1% | 0.1% |
| UndoDancer | 0.0% | -0.8% | -0.7% | 0.0% | 0.0% | 0.0% |
| 1024x768 | 0.0% | -0.8% | -0.7% | -0.2% | -0.2% | -0.2% |
| 1920x1088 | 0.0% | -1.1% | -0.8% | -0.1% | -0.1% | -0.1% |
| average | 0.0% | -1.0% | -0.8% | -0.1% | -0.1% | -0.1% |

Simulation Results

**Running time ratio of 'Inter-view SAO Process'
(Anchor : HTM 5.0.1 CTC + SAO Process in HM8.2)**

| | enc time | dec time | ren time |
|--------------|----------|----------|----------|
| Balloons | 100.0% | 102.1% | 99.3% |
| Kendo | 100.0% | 99.0% | 100.4% |
| Newspapercc | 100.0% | 99.2% | 101.6% |
| GhostTownFly | 99.9% | 99.5% | 102.1% |
| PoznanHall2 | 100.3% | 99.0% | 101.2% |
| PoznanStreet | 100.3% | 97.8% | 105.6% |
| UndoDancer | 100.0% | 98.9% | 103.3% |
| 1024x768 | 100.0% | 100.1% | 100.4% |
| 1920x1088 | 100.1% | 98.8% | 103.0% |
| average | 100.1% | 99.3% | 101.9% |

Summary

- **0.8% ~ 1.0% BD-gains (up to 1.6%) on all dependent.**
 - No complexity impact on dependent views.
 - No considerable memory issue.
- **Confirm the benefit and compatibility of Inter-view SAO Process to current HM.**