

JVT-T076

Constraints on Temporal Direct Mode for SVC

I. Amonou, N. Cammas, S. Kervadec, S. Pateux
Orange – France Telecom Division R&D

July, 15-21 2006



research & development



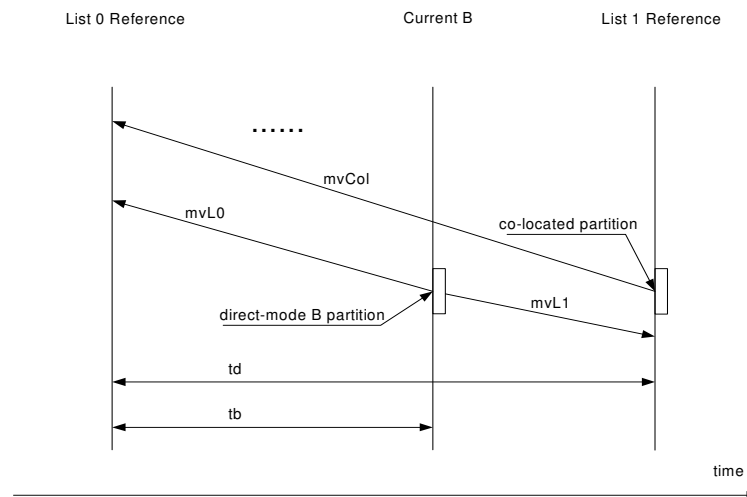
Summary

- Proposal to restrict the Inter-Layer prediction related to the Direct and Skip modes in a reference layer

- Outline
 - Direct modes in AVC
 - SVC specifics
 - Proposed solution for SVC
 - Extension to multiple layers
 - Conclusions

Direct&skip mode in AVC

- Temporal direct mode takes advantage of bi-directional prediction and does not need to transmit motion vectors by deriving them from the ones used in the co-located block of backward reference picture.
- For B picture, and `spatial_mv_pred_flag=0`
 - motion information is inferred from previously decoded picture
 - needs to store motion vector



- For B picture and `spatial_mv_pred_flag=1`
 - motion information of colocated block of previously decoded picture is needed for motion inference

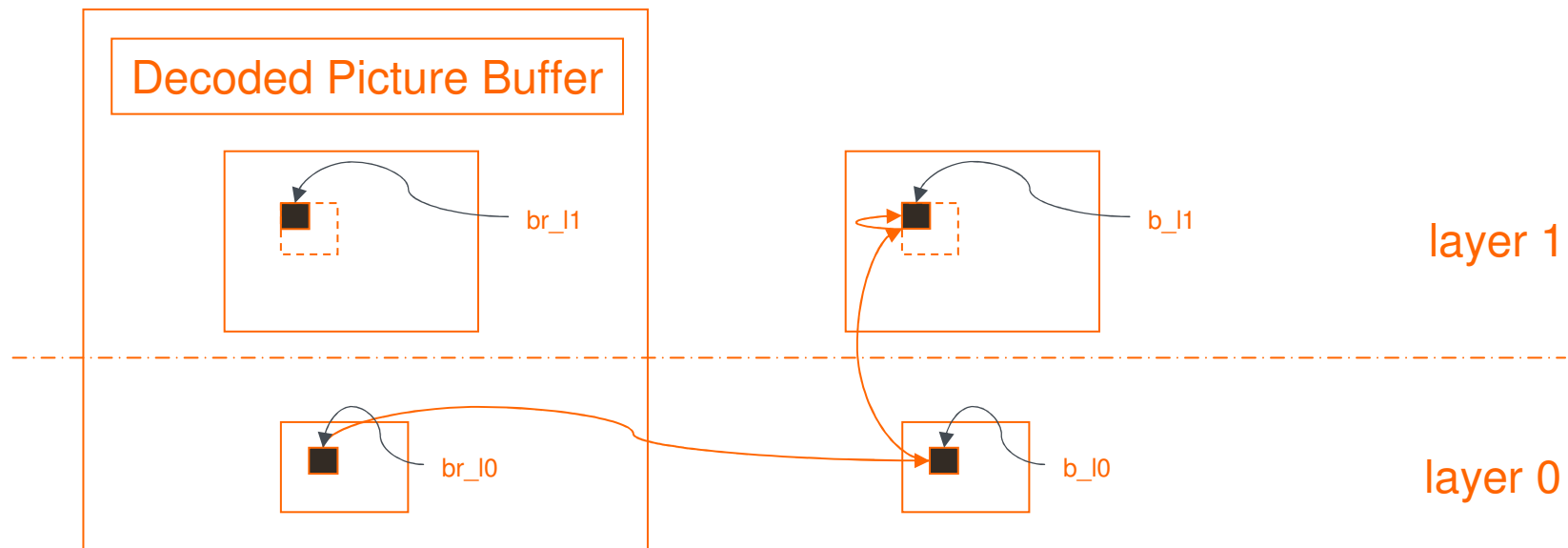
SVC specific configuration

■ Direct mode and inter layer prediction

- ILP : the MV for a block of the current layer is obtained from the MV of the lower reference layer
 - if block b_I1 uses inter layer prediction from block b_I0
 - and block b_I0 is coded using direct (or skip) mode
 - b_I1 needs block br_I0

■ Motion vectors of all layers have to be stored

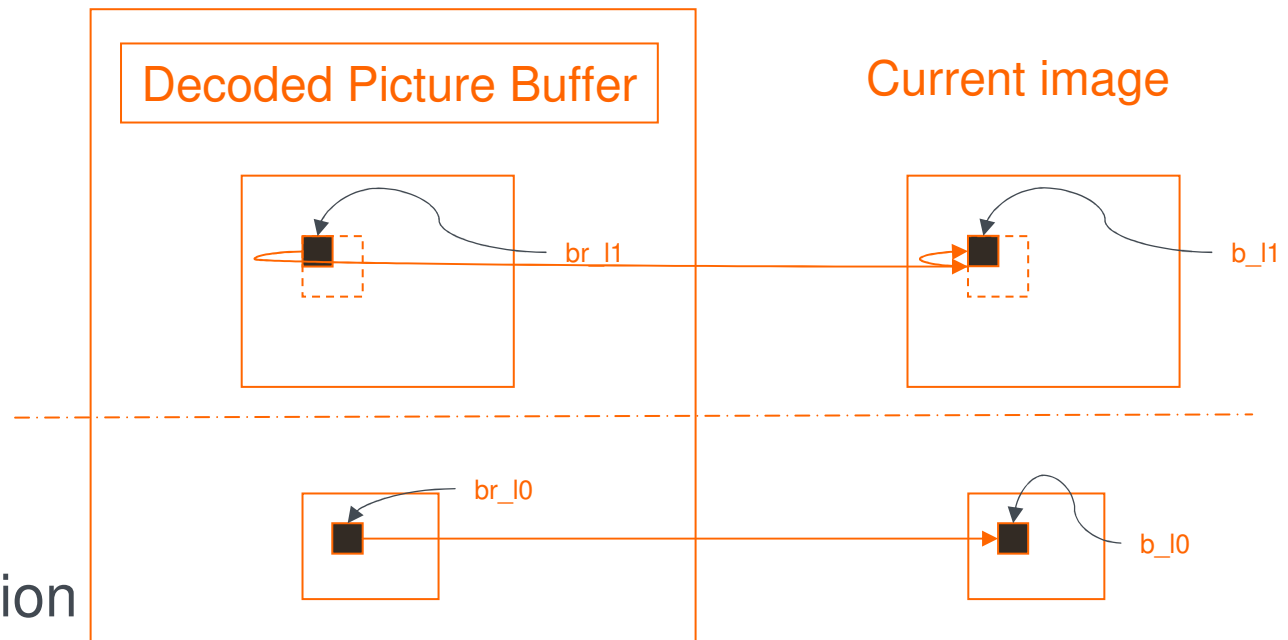
- and not only those of upper layers (cf. single loop decoding concept)



Proposed solution for SVC

■ Consideration

- In the "single loop" mode, prevent from storing motion vectors for all layers

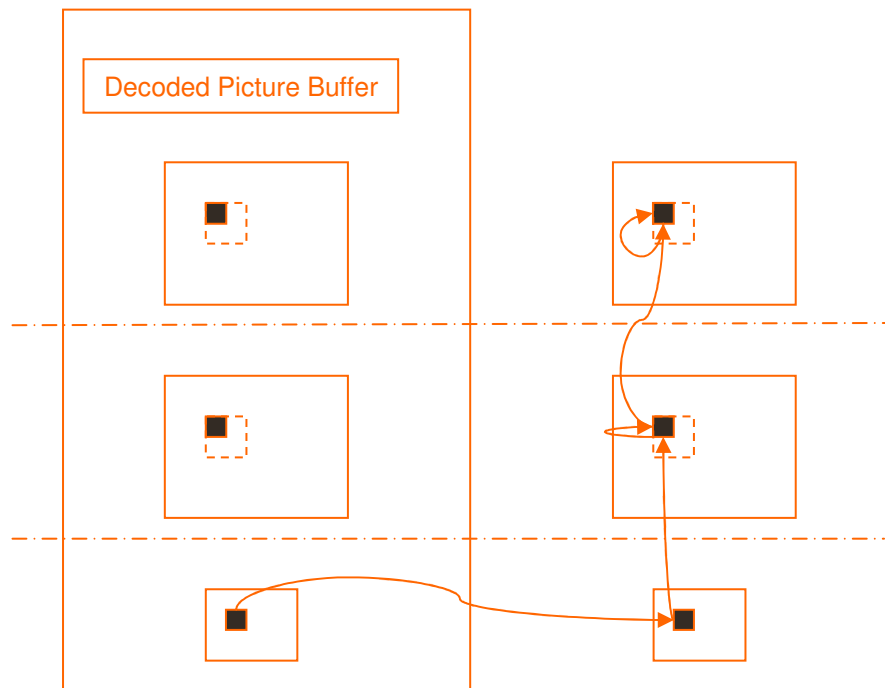


■ Proposed solution

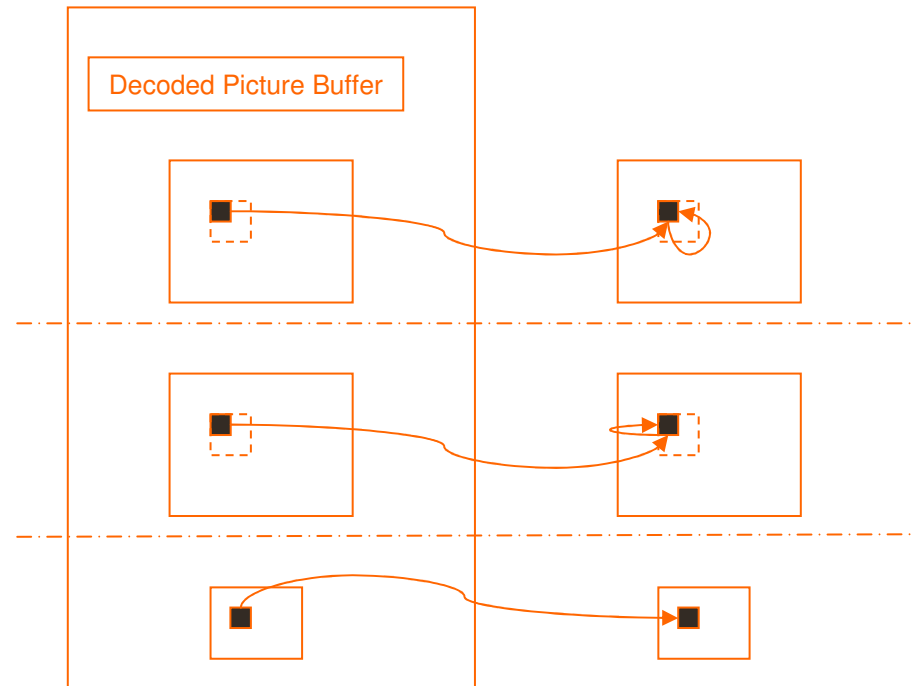
- if block b_{l1} uses inter layer prediction from bloc b_{l0}
- and block b_{l0} is coded using direct (or skip) mode
 - i.e. needs bloc br_{l0}
- then block b_{l1} is coded using direct mode

Extension to multiple layers

Current JD behavior



Proposed behavior



Conclusion

■ We recommend

- to prevent from storing motion vectors for intermediate layers at the decoder
- to substitute signaled inter-layer prediction using a predicted motion vector coded using direct mode, with a direct coding interpretation at the upper layer
- No syntax modification, just semantics

To be interpreted as

