

JVT-T055: Constraints about AVC compatible base layer

I. Amonou, N. Cammas, S. Kervadec, S. Pateux

Orange-France Telecom Division R&D

Klagenfurt, July 2006



research & development

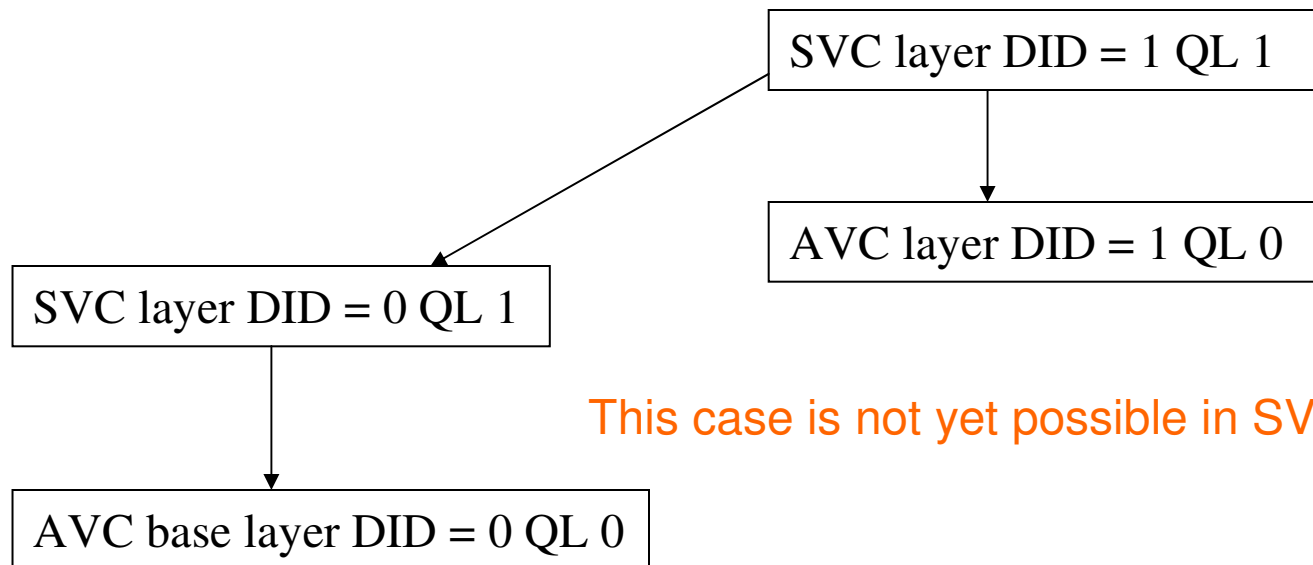


Current constraints on AVC compatible base layer in SVC

- *" When the value of `nal_unit_type` is equal to 20 or 21 for a NAL unit that does not contain a slice of a coded picture, the NAL unit is a suffix NAL unit that shall have `dependency_id` and `quality_level` both equal to 0. A suffix NAL unit with `nal_unit_type` equal to 20 shall be associated with a NAL unit with `nal_unit_type` equal to 1 and shall be the next NAL unit after the associated NAL unit in decoding order. [...]"*
- *"**`dependency_id`** specifies a dependency identifier for the NAL unit. When `dependency_id` is not present, it shall be inferred to be equal to 0. [...] The value of `dependency_id` shall be equal to 0 for a suffix NAL unit."*
- This means that `dependency_id` and `quality_level` for an AVC base layer shall both be inferred to be 0

Use case 1

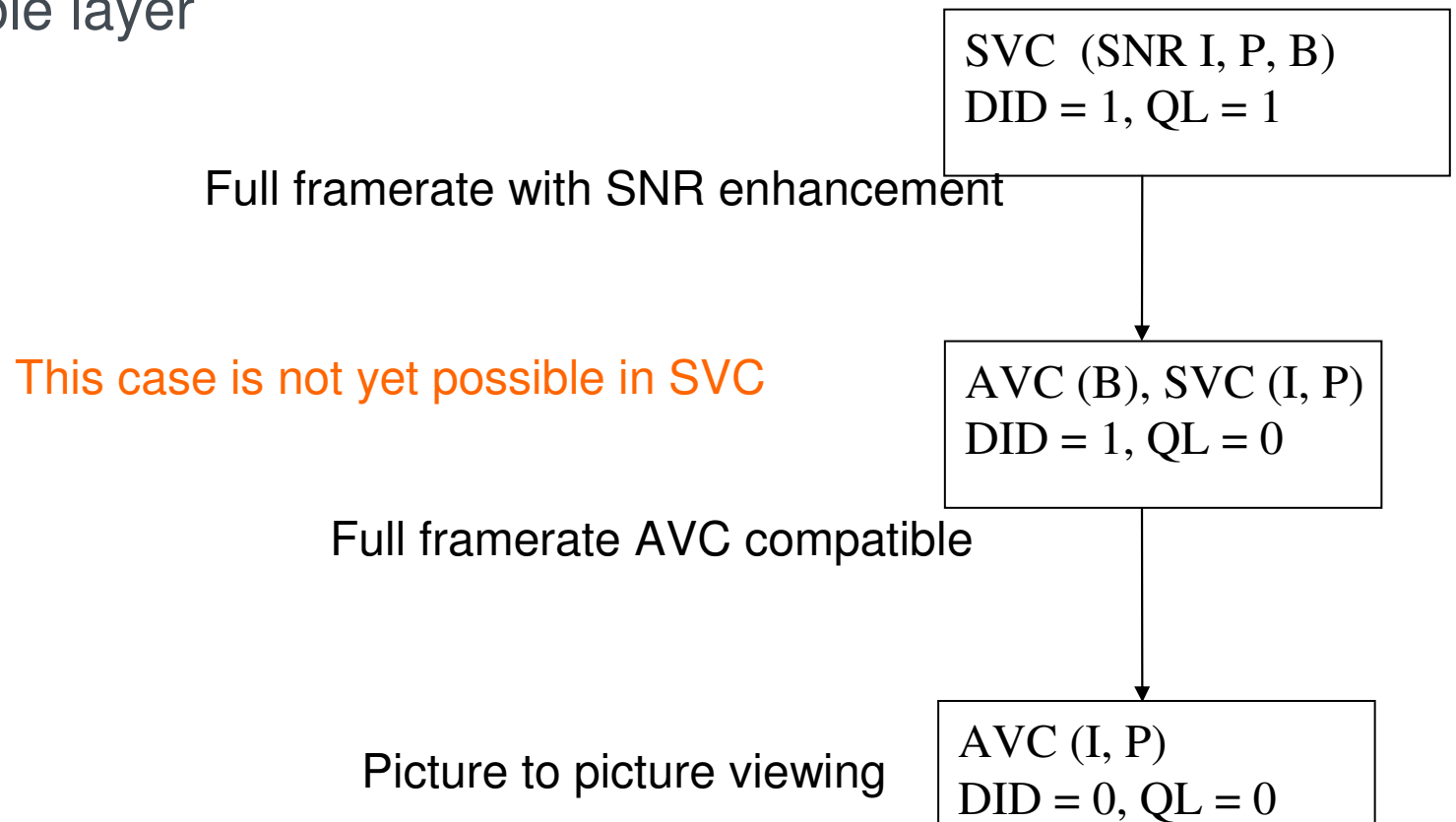
- Need for several AVC compatible layers in one SVC stream
- Interests:
 - Broadcasters can address a wide variety of AVC devices: from Mobile phones to TV sets already deployed
 - Mutualization of contents encoding, platforms, storage, ...



This case is not yet possible in SVC

Use case 2

- Temporal enhancements of AVC base layer by an AVC compatible layer



Syntax modification

- Use reserved_zero_bit to indicate a suffix nal unit:

nal_unit_header_svc_extension() {	C	Descriptor
Simple_priority_id	All	u(6)
discardable_flag	All	u(1)
reserved_zero_bit suffix_nal_unit_flag	All	u(1)
temporal_level	All	u(3)
dependency_id	All	u(3)
Quality_level	All	u(2)
nalUnitHeaderBytes += 2		
}		

- The dependency_id of a suffix NAL unit could have any value

Conclusions and Recommendation

- Use cases needing several AVC compatible layers although the SVC streams are not simulcast of AVC streams
- Modifications allows to:
 - Reinforce the use of SVC by broadcasters
 - By allowing AVC compatibility of SVC on a wide variety of devices
 - Large numbers of already deployed devices should still be addressed with equal quality of services
 - Help the transition from AVC to SVC
 - Improve content management
 - Easy identification of suffix NAL unit
 - Insertion of suffix NAL unit for non AVC NAL unit (for re-tagging any information, PID for instance, ...)
- Recommendation is to adopt the proposed modifications in the SVC JD