

Question(s):	VQEG	Meeting, date:	June. 22-26, 2009
Study Group:	Working Party:	Intended type of document (R-C-D-TD): C	
Source:	NTT (Nippon Telegraph and Telephone Corporation), Japan		
Title:	Merger of Hybrid NR and Bitstream 2		
Contact:	Mr. Keishiro Watanabe	Tel:	+81-422-59-7204
	NTT	Fax:	+81-422-59-5671
	Japan	Email:	watanabe.keishiro@lab.ntt.co.jp
Contact:	Mr. Jun Okamoto	Tel:	+81-422-59-6526
	NTT	Fax:	+81-422-59-5671
	Japan	Email:	okamoto.jun@lab.ntt.co.jp

Please don't change the structure of this table, just insert the necessary information.

Summary

Hybrid NR and Bitstream 2 methods, which are objective quality assessment methods being studied in the Hybrid perceptual / bitstream project in VQEG, have almost the same input and output information. Therefore, we propose to merge the Hybrid NR method with the Bitstream 2 method as a single study item.

1 Introduction

Currently, the objective video quality assessment method, which uses bitstream information for assessment, is being studied in the Hybrid perceptual / bitstream project in VQEG. There are two different methodologies, Bitstream 1 and Bitstream 2 in the study. Bitstream 1 method uses only bitstream information for assessment, and Bitstream 2 method uses decoded pixel information in addition to bitstream information. On the other hand, hybrid methods, which use all stream and pixel information for the objective assessment, are being also studied. Hybrid methods are classified into Hybrid No Reference (NR), Hybrid Reduced Reference (RR), and Hybrid Full Reference (FR). In particular, the Hybrid NR method has almost the same model-structure as that of the Bitstream 2 method. The overlapping scope of Hybrid NR and Bitstream 2 will confuse users and developers of these methods.

2 Discussion

In this section, we give an overview of the Bitstream 2 and Hybrid NR methods. After that, we show that the input and output information of these methods is almost the same by comparing them.

(1) Bitstream 2

Figure 1 shows the Bitstream 2 method. This method is also called P.NBAMS mode 2 in ITU-T SG12.

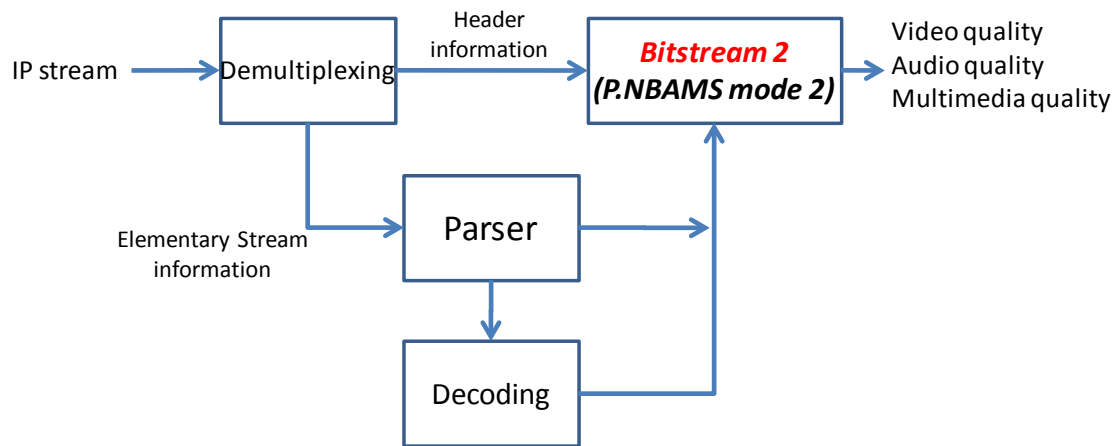


Figure 1: Bitstream 2

Packet headers (e.g. IP, UDP, RTP, TS, and ES) and an elementary stream are extracted by demultiplexing IP video streaming data. After that, the elementary stream is parsed into video coding information such as DCT coefficients and motion vectors. The P.NBAMS mode 2 has access to decoded pixel data as long as the complexity requirements are met.

(2) Hybrid NR

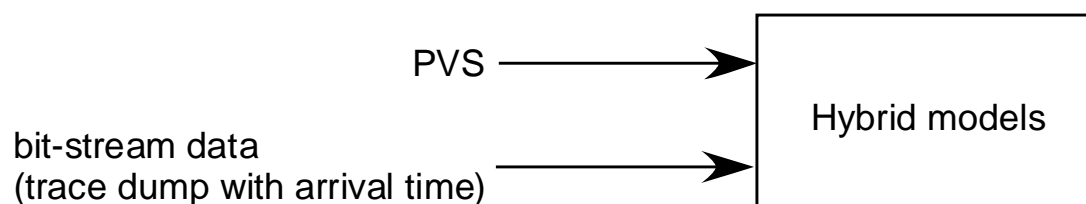


Figure 2: Hybrid NR

Figure 2 shows the Hybrid NR method. This figure is quoted from “090124 - Hybrid models with decisions rev2.ppt” in San Jose VQEG meeting in January 2009. The term “PVS” means the pixel information of a video sequence, and “bit-stream data” means

packet header information such as IP and TS headers in addition to an elementary stream.

From Figures 1 and 2, decoded pixel information, which is the output information of the “Decoding” block in Figure 1, is the same as “PVS” in Figure 2. In addition, The packet header and parsed elementary stream, which are the output of the “Demultiplexing” and “Parser” blocks respectively in figure 1, are equivalent to ”bit-stream data” in Figure 2.

On the other hand, the output of Bitstream 2 and Hybrid NR is obviously objective video quality.

Therefore, the input and output parameters of the Bitstream 2 and Hybrid NR methods are almost the same

3 Proposal

From the above discussion, we propose to merge the Hybrid NR with the Bitstream 2 method as a single study item “Hybrid NR”.