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Title : COMMENT REFERENCE MODEL SPECIFICATIONS

Sub Title : SCENE CUT DETECTION

1.INTRODUCTION

In this paper the scene cut detection is discussed.
Tabel 1 shows for all kinds of different scene cuts:
the previous frame difference, the frame difference and the criterion used in the reference model (REF FD), intra frame signal after the switch minus 128. The average value of the block is suggested.

SWITCH	PREVIOUS FD FD(t-1)	ACTUAL FD FD(t)	REF FD
Split --> Trevor	699.230	14.321.674	7.899.468
Split --> Miss	779.126	11.355.675	14.321.674
Split --> Jack	796.317	11.331.738	11.355.675
Miss --> Trevor	239.042	7.610.937	11.331.738
Miss --> Jack	276.688	10.879.090	7.610.937
Trevor --> Jack	387.718	5.611.082	10.879.090
First split - last split	699.230	10.295.410	5.576.240
First Trevor- last Trevor	327.415	10.310.068	10.295.410
First Miss - last Miss	323.258	5.621.049	10.310.068
First Jack - last Jack	282.451	534.362	5.621.049

Table 1 Different scene cuts

2.DISCUSSION

The scene cut detection as defined in the in the reference model does not always work properly. A fixed value of 128 is for an adaptive coder insufficient.
From the table listed some conclusions can be drawn:

- the frame difference before the scene cut FD(t-1) is always lower than the frame difference at the scene cut FD(t).

- the frame difference at the scene cut is NOT always higher than the REF FD signal.

A scene cut detector based on the actual frame difference and the previous one should work better e.g. :

$$FD(t) > k \times FD(t-1) \Rightarrow switch = .true.$$

$$\text{with } k = 1.5$$

but is not infallible.

3. CONCLUSION

It has been shown in simulations that the operation of the codec at scene cuts can significantly influence the subjective quality of the results. As the scene cut is an unusual situation we propose that a priori knowlegde is used for scene cuts in simulations. The whole frame should be coded intra frame in this case. However generally the coder should be capable of coding scene cuts using the intra/inter attribute.