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MPEG 92/.....

Title: **Simulation results of spatial-temporal weighting**
Source: **PTT Research, NL**
Purpose: **Information**

Introduction

In the Proposal for Test Model 2, revision 2 (TM2.2) an combined syntax for spatial scalability and compatibility is given. This new syntax permits temporal spatial weighting. This is a weighting of the 'normal' temporal prediction and the spatial-prediction from the base layer, factors can be 0, 1/4, 1/2, 3/4 and 1.

This system is compared with the TM2.1 prediction from the base layer system and an improved TM2.1 (temporal-spatial prediction with factors 0, 1/2 and 1), which was demonstrated during the Tarrytown meeting (MPEG92/485).

In the simulations a field-structured picture was used.

TM2.2 versus TM2.1

Simulations were carried out for the sequences Calendar, Table Tennis and Flower Garden, at a total bit rate of 4 Mbits/s, the MPEG-1 bit rate was 1.5 Mbits/s with 49 frames.

	TM2.2	TM2.1 improved	TM2.1
Flower Garden	30.29	30.21	30.02
Calendar	29.91	29.84	29.73
Table Tennis	34.03	33.94	

From a picture quality point of view results show that there is a difference of about 0.2 dB in favour of the new proposed prediction as in the Proposal for TM2.2.

Visual inspection of the TM2.2 image gives the impression of a more smooth image with less noise than the TM2.1 image.

Compatible versus simulcast

Simulations with TM2.2 were carried out for the sequences Calendar, Table Tennis and Flower Garden, at a total bit rate of 4 Mbits/s, the MPEG-1 bit rate was 1.15 Mbits/s with 124 frames.

	Unconstrained	Compatible	Simulcast
Flower Garden	30.90	29.94	29.09
Calendar	30.95	29.62	29.31
Table Tennis	34.98	34.20	33.68

An accompanying tape will be shown.

Conclusion

- Simulations show a gain in image quality by using the spatial-temporal prediction.
- Simulations show a gain in image quality (subjectively and in SNR) of compatible coding over simulcast.