CCITT SGXV
Working Party XV
Specialists group on coding for visual telephony

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Title: **COMMENTS ON CCITT DOCUMENT #248**

This document attempts to provide some answers to the questions raised in section 4 of document #248.

Question 1

CIF has been shown to be adequate for displaying pictures of three people seated side by side. It could be argued that lower resolutions are also acceptable, but why assume that such a yardstick should set the maximimum picture definition?

Question 2

It has been demonstrated that CIF is a reasonable compromise between the abilities of practical cameras and the ideal from 625 line systems. The definition requirement from 525 systems is less stringent.

Question 3

Why should one wish to define the temporal aspects of the picture format any differently from the way that we already have done with 384kbit/s? Temporal sub-sampling should be regarded as part of the source coding process. There seems to be no justification for the statement that there is an implication that the format should be dual in the temporal aspects.

Question 4

Typical cameras and monitors do not resolve full CCIR 601 resolution but they are better than CIF- 64 as proposed in #240. CIF is well matched to existing and future camera performance.

Question 5

Results in Europe already indicate that CIF can be effectively coded at 64kbit/s with pleasing results. It can also be argued that good spatial definition produces a subjectively more pleasing picture than one that is substantially degraded spatially to produce maximum motion rendition.

Question 6

If there is a universal digital video coding format then one can expect that industry will have the incentive to invest in LSI devices to match this format. It is not clear that the route to cheap economic digital video codecs is by the use of general purpose digital signal processing devices.

Question 7

In large quantity production the cost burden of conversion to full CIF will be negligible.

Question 8

The temporal distortion due to format conversion has already been studied with full CIF at 384kbit/s and found to be small. There is little firm evidence that coding efficiency is adversly effected.

Question 9

The picture format for m x 64kbit/s should be identical to that at n x 384kbit/s. There is a clear and straightforward reason for this - evidence is growing that there will be a demand for hardware capable of operating at both rates.

As switched networks evolve from a single 64Kbit/s channel to 2 x 64kbit/s switching capacity, the next logical step is likely to be 384kbit/s. Studies have already been made on proprietary switching systems and many are easily converted to provide 384kbit/s switching. There are therefore considerable attractions from a network operator's point of view if customers are able to use a single piece of hardware to operate at both transmission rates. This will provide the opportunity to offer enhanced video network capability as network capacity allows.

For multipoint communication it is difficult to see how one could even achieve this with codecs operating at different formats unless one decoded the picture completely at the MCU, with consequent loss of quality.

Question 10

There seems little need for a flexible approach as it is clear that the users requirements can be well met with CIF, particularly if it becomes a ubiquitous format as volume production will rapidly force prices down.

Conclusion

It remains our view that CIF should be adopted for 64 as well as 384kbit/s.