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TITLE: COMPARITIVE ANALYSIS OF PRE- AND POST-CODING BUFFERS

In a video codec to be used for a synchronous TDM network the buffering function is required for several reasons:

1. The video data flow is not continuous because of the line and field blanking;

2. The channel data flow is not continuous because of the necessity of multiplexing other media (voice, facsimile etc.)

3. The video and channel clock are generally different;

4. The entropy of the video data undergoes variations in time;

5. etc.

There are two basic philosophies to be adopted for a practical implementation of the buffering function:

1. A buffer is placed before the coder thus containing uncoded data;

2. A buffer is placed after the coder thus containing coded data.

Each solution has clearly merits and drawbacks, viz.:

1. The size of the pre-coding buffer is larger than a post-coding buffer;

2. The input data rate of a pre-coding buffer is high but the data have a well defined structure;

3. The input data rate of a post-coding buffer is lower but bursty and the data do not have a defined structure;

4. Source-coding clock is to be made slower (according to channel clock) in a pre-coding buffer than in a post-coding buffer;

5. In a coder allowing temporal subsampling, the post-coding buffer must have enough capacity to overcome the lack on input data;

6. In a post-coding buffer the finite size of the buffer may make the different areas of the frame with different picture quality;

7. In a pre-coding buffer the coder-to-decoder delay may be made considerably smaller than in a post-coding buffer.

Although the choice between pre- or post-coding byffer in general can be made not to influence compatibility, it is worth analysing more closely the system implications of this choice.