
SOURCE: CHAIRMAN
TITLE : LIST OF INFORMED PATENTS (ISSUE 3)

This document lists up the patents which have been informed the Specialists Group as being relevant to the nx384 kbit/s Flexible Hardware specification (Doc. #249) or draft Rec. H.261 (Attachment 6 to Doc. #347).

The following documents are referred to;

- #124 (BT, GEC)
- #161 (NTT, KDD, NEC, FUJITSU)
- #172 (USA)
- #209 (PICTEL)
- #238 (NTT, KDD, NEC, FUJITSU)
- #262 (BT)
- #278 (CLI)
- #368 (NTT, KDD, NEC, FUJITSU)
- #371 (BT)
- #383 (PKI)
- #388 (SWEDEN)
- #398 (AEG)

It should be noted that further study is required for identifying to what extent these patents are relevant to the Flexible Hardware specification or draft Rec. H.261.

The list also includes those patents which are related to the implementation of the specification.

Reference to the corresponding part of the Recommendation (completed version of H.261) will be made if it is drafted. Patents found to be clearly irrelevant to the Recommendation may be removed from the list when the Recommendation is finalized.

US 3,632,865 (Jan. 4, 1972)
PREDICTIVE VIDEO ENCODING USING MEASURED SUBJECTIVE VELOCITY
B. Haskell, J.O. Limb
Bell Telephone Laboratories

- Motion compensated interframe prediction.
- One vector per moving region.

US 3,679,821 (July 25, 1972)
TRANSFORM CODING OF IMAGE DIFFERENCE SIGNALS
M.R. Shroeder
Bell Telephone Laboratories

- Prediction errors are transformed, quantized.

US 4,281,344 (July 28, 1981)

VIDEO INTERFRAME TRANSFORM CODING TECHNIQUE

F.W. Mounts, A.N. Netravali

Bell Telephone Laboratories

- Interframe prediction errors are transformed. Non significant error pels are replaced by some significant pels, thus number of transmitted coefficients are reduced.
- Shares common idea with variable blocksize transform.

US 3,553,361 (Jan. 5, 1971)

CONDITIONAL REPLENISHMENT VIDEO SYSTEM SAMPLE GROUPING

US 3,553,362 (Jan. 5, 1971)

CONDITIONAL REPLENISHMENT VIDEO SYSTEM WITH RUN LENGTH CODING OF POSITION

F.W. Mounts

Bell Telephone Laboratories

- Conditional replenishment with PCM.
- Number of consecutive significant pels are coded with RLC/EOR.

US 3,609,244 (Sep. 28, 1971)

CONDITIONAL REPLENISHMENT VIDEO SYSTEM WITH VARIABLE LENGTH ADDRESS CODE

F.W. Mounts

Bell Telephone Laboratories

- Address of significant samples are transmitted as the length of the interval between the location of its respective sample and the of the group.
- Address is variable length coded.

US 4,541,012 (Jan. 4, 1982) / EP 0,084,270

VIDEO BANDWIDTH REDUCTION SYSTEM EMPLOYING INTERFRAME BLOCK DIFFERENCING AND TRANSFORM DOMAIN CODING

A.G. Tesher

Compression Labs, Inc.

- Block based conditional replenishment according to interframe difference.
- Significant blocks are transformed.
- Relevant to the 'intra mode' of the Flexible Hardware.

JP 57-041069-A (Mar. 6, 1982)

INTERFRAME-ENCODING SYSTEM

H.Kuroda, T.Matsuoka

NTT

- Demand refresh

JP 60-029068-A (Feb. 14, 1985)

TRANSMISSION ERROR DETECTION SYSTEM

M. Nishiwaki, S. Tsugane, H. Kuroda, N. Mukawa, K. Matsuda,

M. Hiraoka

NEC, NTT, FUJITSU

- Parity check between frame memory contents in the coder and decoder for demand refresh.

US XXXXXX (applied Jan. 7, 1986)

PictureTel Corp.

- Filtering control of the motion compensated block by sending side information.

JP 61-288678-A (Dec. 18, 1986)

QUANTIZING NOISE SUPPRESSING SYSTEM IN INTERFRAME CODING

H. Kuroda, H. Hashimoto

NTT

- Motion vector control of loop filter

US 4,562,466 (Dec. 31, 1985)

DIGITAL DATA TRANSMISSION/RECEPTION HAVING ADAPTIVE ERROR CONTROL

C.S. Clapp, D.P. Devimeux, J.C.R. Jolivet, A.Riou, N.L. Shilston

BT

- Lines of the raster are numbered cyclically in groups of 8, the numbers being part of line synchronizing code words

US 4,698,672 (Dec. 6, 1987)

CODING SYSTEM FOR REDUNDANCY REDUCTION

W. Chen, D.J. Klenke

CLI

- Two runlength coding codes, one is for the run followed by the first non-zero value, the second is for the run followed by other non-zero values

JP 63-121374-A (May 25, 1988)

MOTION COMPENSATED INTERFRAME CODING SCHEME

K. Matsuda, Y. Kato, J. Koike, M. Ohta et al

NTT, KDD, NEC, FUJITSU

- Motion vector control of the loop filter

JP 63-121321-A (May 25, 1988)

ENCODING SYSTEM CAPABLE OF ACCOMPLISHING A HIGH EFFICIENCY BY ANTERIOR AND/OR POSTERIOR PROCESSING TO QUANTIZATION

J. Koike, Y. Kato, M. Ohta, K. Matsuda

NTT, KDD, NEC, FUJITSU

- Multiple VLCs
- Last non-zero trick

XXXXXX (filed 19/4/86, 18/6/86, 8/11/86)

HYBRID CODER WITH DIGITAL LOW-PASS-FILTER CONTROLLED BY THE MOTION VECTOR AND/OR THE QUANTIZER INDEX

PKI

XXXXXX (filed 13/9/86, 8/11/86, 23/5/87)

BITRATE REDUCTION BY A TWO-DIMENSIONAL CODING TABLE FOR ENCODING THE QUANTIZER INDICES IN A HYBRID CODER

PKI

XXXXXX (filed 6/7/87, 10/8/87, 28/12/87)

REDUCTION OF SIDE INFORMATION IN A HYBRID CODER BY MACRO BLOCKS

PKI

XXXXXX (filed Sweden: 1987/02/20, Europe: 1988/02/11, USA: 1988/02/17)

END OF BLOCK TRICK

STA

DE 3629 472 A1 (29.6.86)

EP 0259 562 A1

US 07-090,875

G. Kummerfeldt, F. May, W. Wolf

AEG

- Adaptive prediction among block displacements, object related displacement vector calculation, nullification of the displacement, and nullification of the prediction

DE 30 29 190 (01.08.80)

F. May

AEG

- A hybrid coding scheme with blockwise cosine transform and adaptive quantization in which a frame to frame prediction coefficient is computed, quantized and transmitted.

Note: Block matching motion compensation scheme first appeared in an IECEJ convention record published in July 1974 (July 25-27). The paper was authored by Y. Taki, M. Hatori and S. Tanaka (Tokyo University). The scheme was not filed as a patent.

IMPLEMENTATION METHODS

The following patents are not directly relevant to the Flexible Hardware specification or draft H.261 but describe implementation methods.

EP 113514-A (Nov. 30, 1982)

TELEVISION SIGNAL TRANSMISSION SYSTEM USING CONDITIONAL REPLENISHMENT - USES DIFFERING SCANNING RATES FOR TRANSMITTER AND RECEIVER WHICH USES STANDARD RATE

M.D. Carr, D.G. Morrison, R.C. Nicol

BT

- Asynchronous operation between coder and decoder

EP 103380-A (July 23, 1982)

TRANSMISSION OF VIDEO INFORMATION USING CONDITIONAL REPLENISHMENT - HAS DATA FED TO PATH AT CONSTANT RATE FROM ENCODER BUFFER AND RECEIVED AT DECODER BUFFER, AND DATA READ AT UNEVEN RATE FROM BUFFER

JC.R. Jolivet, D.P. Devimeux, S.K. Clapp, A. Riou, N.L. Shilston

BT

- Marker signals are stored in an auxiliary buffer store for reference by the reading device.

JP 55-158784-A (Dec. 10, 1980)

INTER-FRAME CODING DEVICE

A. Hirano

NEC

- Multi-step motion vector detection

JP 56-143776-A (Nov. 9, 1981)

INTERFRAME ENCODER

A. Hirano

NEC

- Multi-step motion vector detection with use of the previous frame motion vector as the first step

JP 57-037988-A (Mar. 2, 1982)
TELEVISION SIGNAL ENCODING EQUIPMENT
A. Hirano
NEC

- Matching error accumulation method using quantized values

JP 58-107785-A (June 27, 1983)
ENCODER BETWEEN MOVEMENT COMPENSATION FRAMES
A. Hirano
NEC

- Use of forced simple interframe prediction

JP 60-146588-A (Aug. 2, 1985)
SYSTEM AND DEVICE FOR ENCODING ANIMATION PICTURE SIGNAL
J. Ooki
NEC

- Halting of motion compensation in case of update operation

XXXXXX (applied 9 July 1987)
CLASSIFIER IMPLEMENTATION
BT

- Circuit to find the optimum order of transmission for a set of transform coefficients

JP 63 238783-A (Oct. 4, 1988)
IMAGE CODING SYSTEM CAPABLE OF MONITORING AN AMOUNT OF INFORMATION BY FORMING A HISTOGRAM
Y. Hatori, N. Mukawa, T. Koga, K. Matsuda
NTT, KDD, NEC, FUJITSU

- Feed-forward coding control using data generation estimation

JP 63-121372-A (May, 25, 1988)
MOVING IMAGE SIGNAL CODING SYSTEM
Y. Hatori, N. Kato, M. Ohta, Y. Kosugi
NTT, KDD, NEC, FUJITSU

- Significant/insignificant and intra/inter block decision

JP 63-120570-A (May 24, 1988)
DECODING DEVICE CAPABLE OF PRODUCING A DECODED VIDEO SIGNAL WITH A REDUCED DELAY
M. Nishiwaki, N. Kato, Y. Hatori
NTT, KDD, NEC

- Receiving buffer control method

XXXXXX (applied 3 August 1987)
TRANSFORM CODING
BT

- Omission of higher sequency transform coefficients

XXXXXX (applied 23 September 1987)
VIDEO MULTIPLEX
BT

- Multiplexing of blocks of image data and associated overhead

XXXXXX (applied 25 September 1987)

MOTION ESTIMATION

BT

- All comparisons involving a line n of the video signal before commencing comparisons involving $n+p$ (where p is the number of lines encompassed by a block).

XXXXXX (applied 26 February 1988)

VARIABLE LENGTH DECODING

BT

- A VLC decoder configuration.

XXXXXX (filed 10/6/86)

DIGITAL FILTER FOR VIDEO APPLICATIONS

PKI

XXXXXX (filed 6/6/87)

A METHOD FOR MOTION ESTIMATION IN A MOTION COMPENSATED HYBRID CODER

PKI

XXXXXX (filed 27/3/87)

CONTROL OF THE QUANTIZER IN A HYBRID CODER BY THE CODER STATUS

PKI

DE 36 44 407 (24.12.86)

G. Kummerfeldt, W. Schwerzel

AEG

- A process for displacement vector search by a programmable array of processor elements

DE 33 28 341 (05.08.83)

F. May, W. Wolf

AEG

- A process of frame to frame prediction coding in which the motion compensated estimated picture is computed in a hierarchical manner.

END