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Pauls et al.

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(54) **ADAPTIVE COMMUNICATIONS TRANSCODING AND ERROR CONTROL**

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(52) **U.S. Cl.** **370/465**; 714/752
(58) **Field of Search** 370/465, 466, 370/467; 714/746, 752, 758, 759, 761, 762

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(57) **ABSTRACT**

The present invention is a method for improving data transfer performance over communications networks connecting data networks and users using adaptive communications formatting. Adaptive communications formatting includes encoding (or compressing) the data and applying error control schemes to reduce the amount of data being transmitted and to correct and/or conceal errors occurring during data transmission. In one embodiment, the present invention uses a set of transcoding techniques to encode (or compress) the data and a set of error control schemes to correct and/or conceal errors occurring during data transmission. The particular sets of transcoding techniques and error control schemes selected to format the data are adaptive to factors, such as the nature of the communications network connecting a user to an access server on the data network, the preferences of the user, and the data type of the data being transmitted to the user (or the access server).

35 Claims, 4 Drawing Sheets

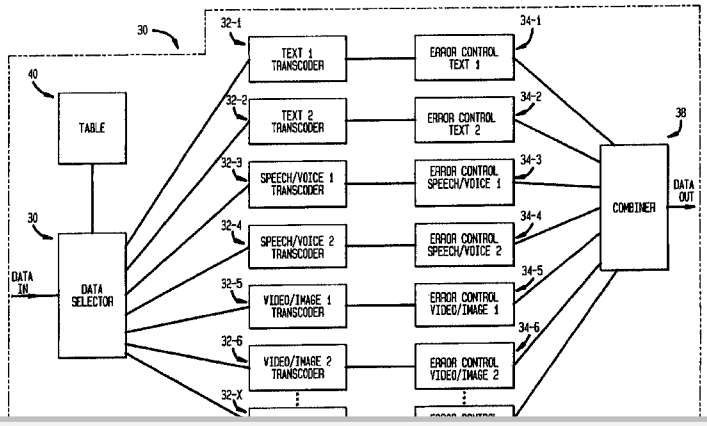


FIG. 1

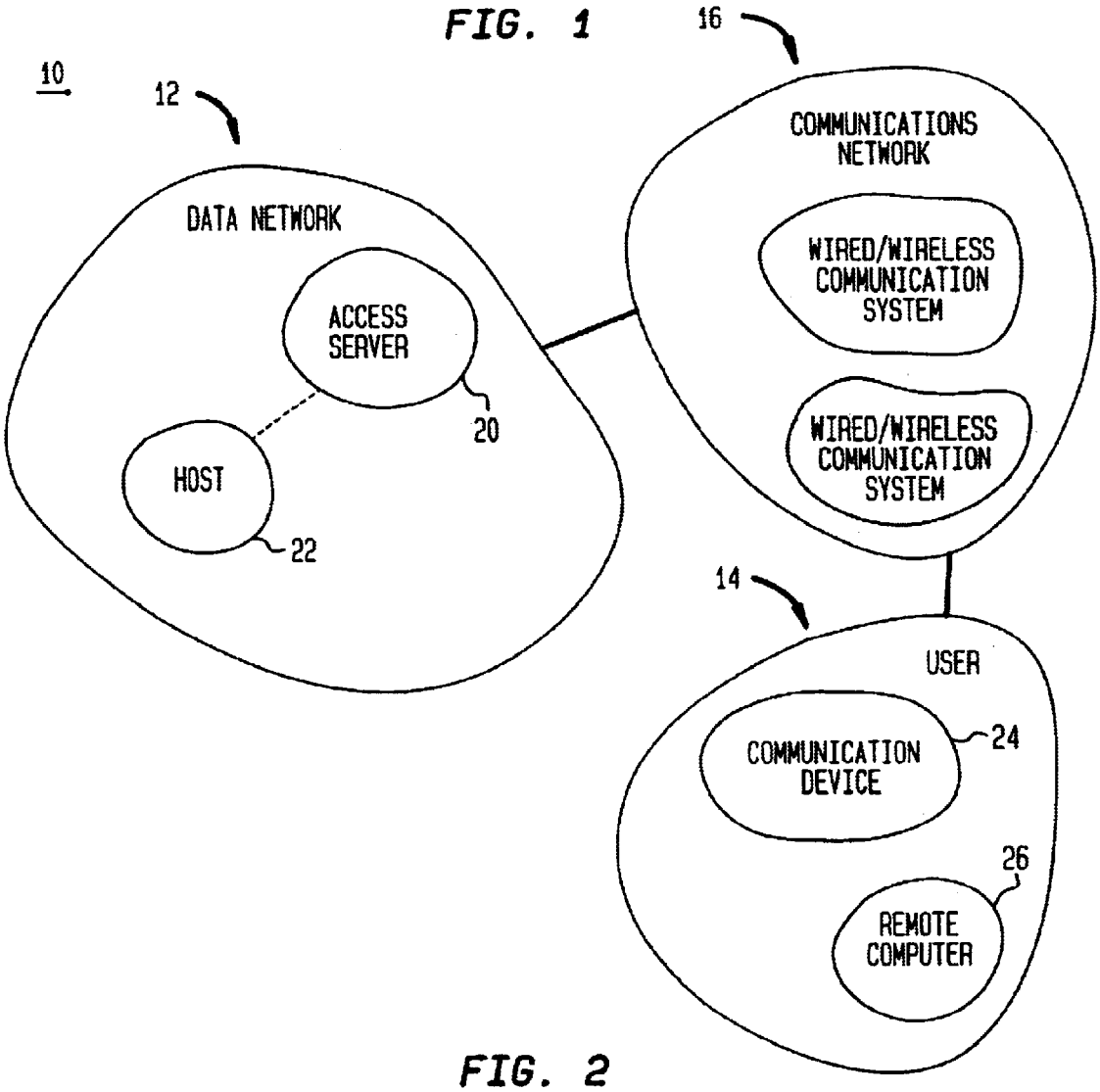
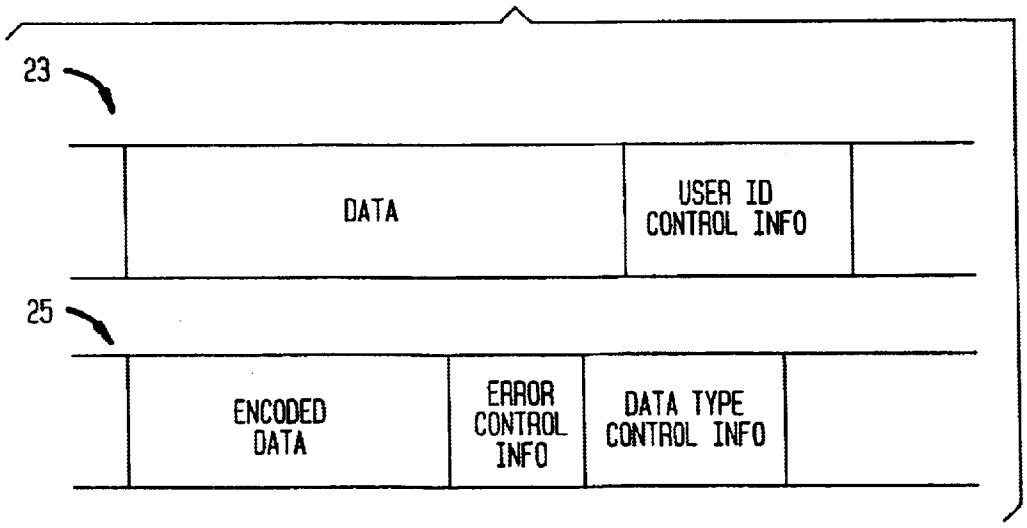


FIG. 2



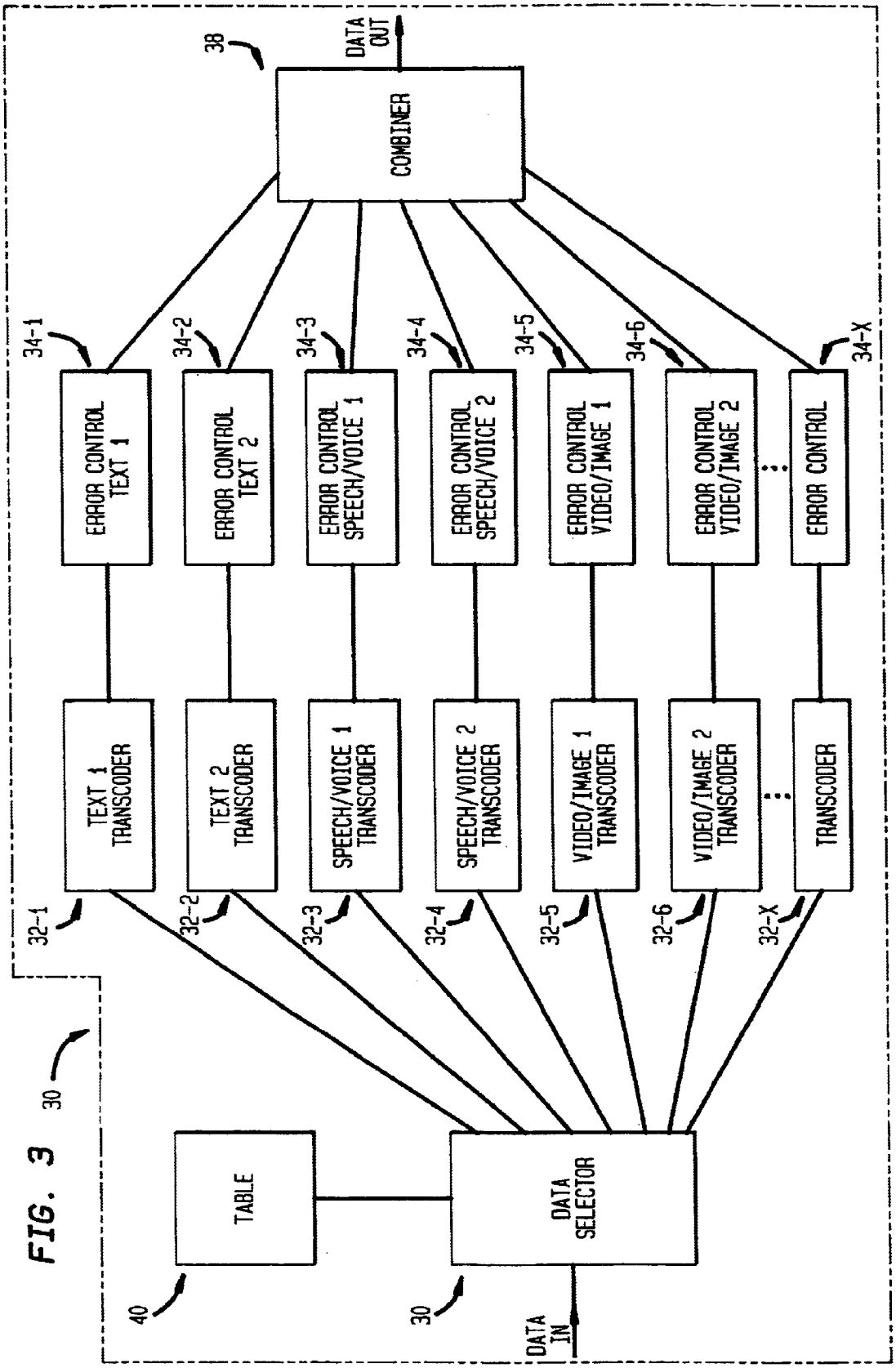


FIG. 3

FIG. 4

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USER #	DATA TYPES					
	TEXT		SPEECH/VOICE		VIDEO/IMAGE	
	TRANSCODER	ADAPTATION LAYER	TRANSCODER	ADAPTATION LAYER	TRANSCODER	ADAPTATION LAYER
000001	TEXT 1	TEXT 1	SPEECH/VOICE 2	SPEECH/VOICE 2	VIDEO/IMAGE 1	VIDEO/IMAGE 1
000100	TEXT 2	TEXT 2	SPEECH/VOICE 1	SPEECH/VOICE 1	VIDEO/IMAGE 1	VIDEO/IMAGE 1
000200	TEXT 2	TEXT 2	SPEECH/VOICE 2	SPEECH/VOICE 2	VIDEO/IMAGE 2	VIDEO/IMAGE 2
000222	NONE	NONE	NONE	NONE	NONE	NONE
000300	TEXT 1	TEXT 1	SPEECH/VOICE 2	SPEECH/VOICE 2	VIDEO/IMAGE 1	VIDEO/IMAGE 1
000333	TEXT 1	TEXT 1	SPEECH/VOICE 1	SPEECH/VOICE 1	VIDEO/IMAGE 1	VIDEO/IMAGE 1
004000	TEXT 2	TEXT 2	SPEECH/VOICE 1	SPEECH/VOICE 1	VIDEO/IMAGE 2	VIDEO/IMAGE 2

FIG. 5

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DATA TYPE	SUB-TYPES (BIT RATE)	TRANSCODER ENCODING ALGORITHMS (BIT RATE)	ADAPTATION LAYERS
SPEECH/VOICE	AUDIO (256 Kbps) WAVE (64 Kbps) SPEECH (32 Kbps)	VCELP (8Kbps) VSEOP (8Kbps) EDRU (4-8 Kbps)	HYBRID ARQ ERROR CONCEALMENT (MUTING)
VIDEO/IMAGE	TIFF GIFF MPEG (1.5Mbps) MPEG2 (2.0 Mbps)	H.263 (8-24 Kbps)	HYBRID ARQ ERROR CONCEALMENT (INTERPOLATION)
TEXT	ASCII MSWORD	GZIP PKZIP	ARQ

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