

[0038] DTS DIGITAL SURROUND™ by Digital Theatre Systems, Inc. is a competing and alternative digital surround sound format to DOLBY DIGITAL™. Like DOLBY DIGITAL™, DTS DIGITAL SURROUND™ provides up to five discrete channels of full frequency effects, plus an optional sixth channel dedicated to low frequency effects. DTS DIGITAL SURROUND™, however, offers higher data rates, and therefore uses more of the capacity of the memory **106**, than DOLBY DIGITAL™.

[0039] An extended surround version of DTS DIGITAL SURROUND™, called DTS-ES MATRIX™, encodes the audio data with a third surround channel (i.e., surround back channel) that can be decoded for playback over a rear center speaker placed behind the player. Yet another extended surround version of DTS DIGITAL SURROUND™, called DTS-ES DISCRETE 6.1™, supports a fully discrete surround back channel. That is, the surround back channel has its own data stream and is truly independent from those of the surround left and right channels.

[0040] DOLBY PRO-LOGIC™ by Dolby Laboratories, Inc. is an analog surround sound format that encodes four channels of audio information onto two stereo analog channels during production. The encoded two-channel audio data is stored in an analog section of the memory **106**, such as on a Hi-Fi VHS tape. The four channels include front center, front left, front right, and mono surround. The front center channel, among other things, “anchors” any dialogue in a wagering game to the image shown on the video display **12**. The CPU **102** includes an analog surround sound decoder that, during playback, uses a technique called matrixing to derive the front center channel and surround sound channel from the encoded two-channel audio data stored in the memory **106**. The surround channel is limited in bandwidth to frequencies from 100 Hz to 7,000 Hz.

[0041] DOLBY SURROUND™ by Dolby Laboratories, Inc. is an analog surround sound format that encodes three channels of audio information onto two stereo analog channels. The three channels include front left, front right, and surround. Relative to DOLBY PRO-LOGIC™, DOLBY SURROUND™ gives up the front center channel along with some degree of fidelity in the surround channel.

[0042] In the above-described embodiments, the CPU **102** for selecting audio data to be processed and played back is located at the gaming terminal **10**. In an alternative embodiment shown in **FIG. 11**, the gaming terminal **10** and a plurality of other gaming terminals are linked to a remote host computer **112** over a network such as an Ethernet-based local area network (LAN). The terminal **10** may, in turn, select and process audio data and video data from its memory **106** representative of a wagering game outcome. The game outcome may be determined at the host computer **112** or locally at the terminal **10**. Alternatively, the host computer **112** may transmit audio and/or video content to the terminal **10**, which in turn receives, processes (e.g., decodes and amplifies), and plays back the received content. The transmitted content may be streamed so that the terminal **10** can start playing the content before the entire file has been transmitted. For streaming to work, the terminal **10** must be able to collect the content and send it as a steady stream to the application that is processing the data and converting it to sound or images. If the streaming terminal **10** receives the content more quickly than required, it saves the excess content in a buffer.

[0043] The performance, listening environment, and physical locations of the surround sound speakers may vary in different installations. For example, with respect to the embodiments shown in **FIGS. 5 and 6**, in one installation the surround sound speakers may be located about seven feet off the ground and about ten feet from the terminal **10** for which they are providing surround sound. In another installation the surround sound speakers may be located about eight feet off the ground and about twelve feet from the terminal **10**. The variable locations may adversely impact the effectiveness of the speakers in providing surround sound. Accordingly, to counteract this potential issue and create the optimum acoustical experience for players, the terminal **10** may offer operator-selectable, audio configuration options. An operator can access the configuration options and current settings for each option via an onscreen setup menu. The configuration options may, for example, include the following:

[0044] SPEAKER BALANCE ADJUSTMENT: This operation uses an internal test-tone generator for balancing the levels of the front and surround sound speakers. The operator performs this adjustment of each speaker output level while situated at a player’s typical playing position. To initiate the adjustment process, the operator may press an onscreen “test” key. In response, a hiss-like calibration tone is heard in sequence from the speakers included in the speaker arrangement. In a five speaker arrangement, for example, the calibration tone is heard in sequence from the front left speaker, the front center speaker, the front right speaker, the rear right speaker and the rear left speaker. The state of the calibration tone output is shown in the video display **12** of the terminal **10**. During the calibration tone sequence, the operator can select any speaker whose output level the operator wishes to adjust and can adjust the level of the selected speaker by pressing onscreen +/- keys. While making an adjustment to a selected speaker, the calibration tone is fixed on the selected speaker.

[0045] SURROUND BALANCE CONTROL: Adjusts the left and right output level of the surround sound speakers to compensate for sound imbalance caused by speaker positions or listening environment conditions.

[0046] SURROUND SWITCH: Normally on, the operator can turn this switch off to disable output from any surround sound speakers and re-distribute any surround sound signals to the front speakers.

[0047] DELAY TIME: The operator can adjust the time difference (i.e., delay time) between the beginning of the sound from the front speakers and the beginning of the effect sound from the surround sound speakers. The larger the value, the later the effect sound is generated. The control range may, for example, be 0 to 50 milliseconds (ms) in 1 ms steps. The operator can adjust the delay time by pressing onscreen “+/-” keys.

[0048] SURROUND SOUND SPEAKER SIZE: The operator can define the size of the surround sound speakers to be small or large. The factory preset position is small. In the small position, low bass