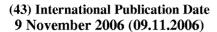
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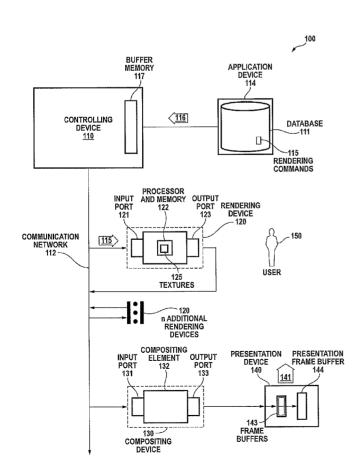
60/676,241 29 April 2005 (29.04.2005) US 60/676,240 29 April 2005 (29.04.2005) US 60/676,254 29 April 2005 (29.04.2005) US

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[Continued on next page]

(54) Title: COMPRESSION OF STREAMS OF RENDERING COMMANDS



(57) Abstract: A distributed rendering system with compression of streams of rendering commands. The controlling device (110) fits streams of rendering commands to the rendering devices (120) within the frame duration by distributing compressed streams. Streams are compressed by caching relatively duplicative sequences of rendering commands. To provide additional efficiency, textures that are mapped to 3D objects can be stored at the rendering devices (120) such that they do not need to be sent from a controlling device (110) every time the rendering device (120) needs them. Also, long chains of individual vertex calls can be converted on the fly into vertex arrays.



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| B. FIELDS SEARCHED | | | | |
| Minimum documentation searched (classification system followed by classification symbols) U.S.: 345/522,504;382/305 | | | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | | | |
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| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | | | |
| Category * | Citation of document, with indication, where a | ppropriate, of the | relevant passages | Relevant to claim No. |
| X | US 6,397,230 B1 (Carmel et al.) 28 May 2002 (28.03 | 5.2002) | | 1-7, 9-10 |
| Y | US 2005/0041031 A1 (Diard) 24 February 2005 (24.02.2005) | | | 1-7, 9-10 |
| Y | US 5,377,329 (Seitz) 27 December 1994 (27.12.1994) abstract | | | 8 . |
| Y | US 5,701,468 (Benayoun et al.) 23 December 1997 (23.12.1997) abstract | | | . 11 |
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