IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent of Kikinis	§	
	§	
U.S. Patent No. 5,779,334	§	Petition for *Inter Partes* Review
	§	
Issued: July 14, 1998	§	
	§	
	§	Attorney Docket No.: 42299.43
Title: ENHANCED VIDEO	§	Customer No.: 27683
PROJECTION SYSTEM	§	Real Party in Interest: Xilinx, Inc.
	§	

<u>Declaration of A. Bruce Buckman, Ph.D. under 37 C.F.R. § 1.68</u>

<u>Directed to Petitioner's Reply</u>

I.   INTRODUCTION

1.   I, Dr. A. Bruce Buckman, am making this declaration at the request of Xilinx in IPR2013-00112 of U.S. Patent No. 5,779,334 ("the '334 Patent") to Kikinis.

2.   I previously submitted a declaration explaining why the '334 patent is invalid. That declaration is marked as XLNX-1005, and sets forth my experience, qualifications, publications, materials considered and compensation. I also provided a supplemental declaration that provides additional information regarding my qualifications. (*See* XLNX-1008.)

3.   As described in my prior declaration, I have over forty years of experience in the field of optics, including thirty-five years of experience as a

professor in the electrical engineering department of the University of Texas at Austin. During this time, my teaching and research have focused on a wide range of topics in field of optics.

4.   The list of materials I have considered is set forth in my opening declaration. In addition, I have reviewed the Board decisions, IV's Oppositions, the Declarations of Mr. Smith-Gillespie, and all exhibits cited thereto in both the '545 and '334 IPRs. I have also reviewed the deposition of Mr. Smith-Gillespie (XLNX-1013 and XLNX-1014) as well as XLNX-1015, which contains excerpts from Spatial Light Modulator Technology (Uzi Efron ed., Marcel Dekker 1995). I have also reviewed the other exhibits cited in this report.

II.   SUMMARY OF OPINIONS

5.   This declaration addresses a variety of issues that have arisen since I submitted my original declaration. This includes issues raised by (1) the Board's Decision to institute review; (2) IV's Opposition; and (3) the testimony of Mr. Smith-Gillespie. For the reasons set forth below and in my other declarations, it is my opinion that the '334 patent is invalid.

III.   CLAIM CONSTRUCTION

6.   The Board's Decision addresses several claim construction issues. Although the Board addressed these terms at IV's request, it did not adopt IV's

proposed constructions. The following is my response to the constructions proposed by IV and the preliminary constructions adopted by the Board.

A. "light-shutter matrix system"

Board Preliminary Construction	IV Proposed Construction
A set of matrices, such as monochrome LCD arrays or cells of a monochrome LCD array, where each matrix comprises a rectangular arrangement of elements capable of limiting the passage of light.	A two-dimensional array of elements that selectively admit and block light.

7. I generally agree with the Board's preliminary construction of "light-shutter matrix system." In particular, I agree that a light shutter, in the context of the '334 patent, is an element that is "capable of limiting the passage of light."

8. IV does not propose an alternative construction, but it does provide a long discussion of how it interprets the '334 patent on this point. I disagree with several of IV's points, as described below.

9. IV argues that I have provided an opinion on "LCD cell" that is inconsistent with the specification. Not so. In my deposition testimony, I explained that the term LCD cell in the context of the '334 patent refers to the entire LCD device. Ex. 2010 at 49:22-51:1. The fact that the words "cell" and "pixel" are interchangeable in some contexts and not in others is not relevant to my opinions.

10. With respect to the "matrix system" claim element, IV argues that a person having ordinary skill in the art "would appreciate that the claimed system of the '334 patent is an electrically addressed system." (Response, Paper No. 26 at 12.)

I disagree. As I discuss below, all LCD display devices create images using a continuous thin layer of liquid crystal material. LCD display devices use electromagnetic fields to organize the liquid crystal into a matrix of pixels arranges in rows and columns. Each individual pixel is a "light shutter" element that is capable of limiting (or blocking) the passage of light.

11.   The Board's preliminary construction limits the phrase "matrix system" to a "rectangular arrangement." I do not object to this proposed construction, although I note that other reasonable constructions may be broader. A broader interpretation of "matrix system" would not impact my analysis.

12.   I have reviewed the Tannas reference that IV cites on pages 12-15 of its Response. I generally agree that the Tannas reference describes one or more ways to make a "matrix" system display. I do not agree, however, that the cited portions of Tannas describe *all* possible ways to implement a light-shutter matrix system. Below, I describe other ways to make a pixelated light-shutter matrix system.

B.   "video controller adapted for controlling the light-shutter matrices"

Board Preliminary Construction	IV Proposed Construction
A component that controls light-shutter matrices to facilitate the display of video	A component that controls light-shutter matrices to facilitate the display of video in accordance with a video signal.

13.   I agree with the Board's proposed construction of "video controller adapted for controlling the light-shutter matrices." Specifically, I agree that the

"video controller" of the '334 patent is a component that controls the light shutter matrices to facilitate the display of video.

14. IV's proposed construction requires the video controller to act "in accordance with a video signal." I disagree with this construction because it adds a limitation to the claims. As a practical matter, all LCD video projection systems in the mid-1990s used a video controller to control the operation of the LCD and to display video. But this "video controller" component was not responsible for processing the incoming video signal. Instead, the video signal went to a video decoder that converted the video signal into a different format. Nothing in the '334 patent requires these two functions to be performed in the same component. Mr. Smith-Gillespie and I agree that in 1996, the video-signal-decoding and the light-shutter-matrix controlling functions were not generally performed on the same chip. (XLNX-1014 at 210:23-212:6.) Thus, I disagree that the claims require the video controller to act "in accordance with a video signal."

C. "equivalent switching matrices"

Board Preliminary Construction	IV Proposed Construction
Switching matrices that are corresponding or virtually identical in function or effect	Switching matrices that are virtually identical in function and effect

15. I agree with the Board's proposed construction of "equivalent switching matrices" as being "switching matrices that are corresponding or virtually identical in function or effect."

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