

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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

Declaration of A. Bruce Buckman, Ph.D.

Under 37 C.F.R. § 1.68

I, Dr. A. Bruce Buckman, do hereby declare:

1. I am making this declaration at the request of Xilinx in the matter of the Inter Partes Review of U.S. Patent No 5,779,334 (“the ’334 Patent”) to Kikinis.

2. I am being compensated for my work in this matter. My compensation in no way depends upon the outcome of this proceeding.

3. In the preparation of this declaration, I have studied:

- (1) The ’334 Patent, XLNX-1001;
- (2) U.S. Patent No. 5,264,951 (“Takanashi”), XLNX-1002;
- (4) U.S. Patent No. 5,287,131 (“Lee”), XLNX-1003; and
- (5) U.S. Patent No. 5,777,796 (“Burstyn”), XLNX-1004.

4. In forming the opinions expressed below, I have considered:

- (1) The documents listed above,

- (2) The relevant legal standards, including the standard for obviousness provided in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), and any additional authoritative documents as cited in the body of this declaration, and
- (3) My knowledge and experience based upon my work in this area as described below.

Qualifications and Professional Experience

5. My qualifications are set forth in my curriculum vitae, a copy of which is provided as Exhibit XLNX-1006. As set forth in my curriculum vitae, I have over 44 years of experience in Electrical Engineering, including optical engineering.

6. My 44 years of experience in optical engineering includes over 15 years of teaching a graduate course in fiber and guided-wave optics at the University of Texas at Austin, where I held the ranks of associate professor and professor from 1974 until my retirement in 2009. Course topics included many of the components that appear in the '334 Patent, such as filters, prisms and lenses for redirecting light rays, and dichroic elements for combining or splitting light of different wavelengths or colors. I authored a textbook, *Guided-Wave Photonics* as an aid in teaching the course. I concurrently conducted research in optical systems that resulted in dozens of peer-reviewed publications, including one on a 6-Degree

of freedom non-contact optical position sensor that won the Best Paper Award at an international conference in 1994. I am a coinventor on a U.S. Patent for that device, and an inventor on three other patents covering various optical systems. I have consulted for several companies on optical technology. I have also served as an expert witness in several litigations involving optical systems by preparing declarations and expert reports as well as providing deposition, Markman hearing, and trial testimony.

7. I am familiar with the knowledge and capabilities one of ordinary skill in the optical design arts in the period around 1996. Specifically, my work (1) with students, undergraduates as well as masters and Ph.D. candidates, (2) with colleagues in academia, and (3) with engineers practicing in industry allowed me to become personally familiar with the level of skill of individuals and the general state of the art. Unless otherwise stated, my testimony below refers to the knowledge of one of ordinary skill in the optical design arts during the 1995-1997 time period, including the priority date of the '334 Patent.

8. In my opinion, the level of ordinary skill in the art for the '334 Patent is a bachelor's degree in electrical engineering or physics combined with: i) coursework including at least two semesters with a specialization in optics and/or optical systems, and ii) two years of experience designing video based optical systems, including designing optical systems with off the shelf parts.

Relevant Legal Standards

9. I have been asked to provide my opinions regarding whether the claims of the '334 Patent are anticipated or would have been obvious to a person having ordinary skill in the art at the time of the alleged invention, in light of the prior art. It is my understanding that, to anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of the claim. Further, it is my understanding that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I also understand that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

10. It is my understanding that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable results; a predictable use of prior art elements according to their established functions; applying a known technique to a known device (method, or product)

ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. My analysis of the '334 Patent is set forth below.

Background Of '334 Patent

11. The '334 Patent relates to an “Enhanced Video Projection System.” ('334 Patent, Title). Specifically, the '334 Patent teaches a system that combines separate light beams into a single projectable beam. ('334 Patent, Abstract). To do this, the '334 Patent uses separate light sources to create separate light beams, which then pass through color filters and Liquid Crystal Display (“LCD”) arrays before they are combined into the projectable light beam. (*Id.*; *see also* '334 Patent at 3:10-30)

12. Claim 1 in relation to Fig. 1 provides a basic overview of the teachings of the '334 Patent.

1. A video projector system comprising:
 - a source projecting parallel beams of light of different colors;
 - a light-shutter matrix system comprising a number of equivalent switching matrices equal to the number of beams and placed one each in the beam paths;
 - a video controller adapted for controlling the light-shutter matrix system; and
 - an optical combination system adapted for combining the separate

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