

Paper No.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

XILINX, INC, Petitioner

v.

Patent of INTELLECTUAL VENTURES MANAGEMENT, LLC,  
Patent Owner.

Patent No. 5,632,545

Issue Date: May 27, 1997

Title: ENHANCED VIDEO PROJECTION SYSTEM

---

*Inter Partes* Review No. IPR2013-00029

---

SUPPLEMENTAL DECLARATION OF A. BRUCE BUCKMAN, PH.D

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

1. I am making this declaration at the request of Xilinx in IPR2013-00029 of US Patent No 5,632,545 (“the ’545 Patent”) to Kikinis.

2. I previously submitted a declaration explaining why the ’545 patent is invalid. That declaration is marked as XLNX-1006, and sets forth my experience, qualifications, publications, materials considered and compensation. I have also submitted two additional declarations in this matter regarding the invalidity of the original claims (XLNX-1013) and the proposed substitute claims (XLNX-1012). I understand that IV objects to my qualifications to provide the testimony set forth in the two latter declarations.

3. As described in my prior declarations, 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. I understand that Patent Owner Intellectual Ventures has objected to my testimony on the grounds that I “lack[] expertise in the relevant field” and do not possess “special skill, knowledge, or experience concerning the particular issue before the Board.” I disagree—I believe my experience and qualifications in the

field of optics speak for themselves. Nevertheless, to eliminate any doubt, I have been asked to provide the following elaboration on my experience and expertise as it pertains to the subject matter of the '334 patent.

5. As noted in my previous declaration, 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. Course topics included many of the components that appear in the '545 Patent, such as filters, prisms and lenses for redirecting light rays, and dichroic elements for combining or splitting light of different wavelengths or colors. For example, that course dealt with many image processing topics, including using a dynamic mask to create a desired output pattern or image. LCDs and spatial light modulators are just two of many types of dynamic masks that can be used to selectively block or transmit light to create dynamically changing images or patterns, of which video is but one example.

6. 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 co-inventor on a US Patent for that device, and an inventor on three other patents covering various optical systems.

This combined teaching and research experience with varying realizations of each of the above optical components has given me familiarity with the results of substituting one realization of a particular component for another.

7. I also taught courses on fiber and guided wave optics that included significant discussions of the components that make up the systems discussed in the '334 patent and the prior art references at issue, including components such as dichroic prisms, filters, polarizers, spatial light modulators, and other similar components.

8. During my career, I also designed and built systems using these components. These systems included prisms and mirror systems for separating light, lens systems for focusing light, lens / mirror systems for recombining light, polarizers for controlling light polarity, color filters, and interferometers that split and then subsequently recombine light.

9. This experience is directly relevant to the '545 patent. Claim 1 of the '545 patent reads:

1. A video projector system comprising:

individual light sources, one each for each color to be projected, adapted to provide each a separate light beam;

a lens system in the path of the separate light beams, adapted for focusing the beams;

a number of individual color filters equal to the number of beams, in the colors to be projected, and placed one each in each beam path;

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 matrices; and

an optical combination system adapted for combining the several beams into a single composite beam for projection on a surface to provide a video display;

10. I have experience with all of the components of this system. For example, a source projecting parallel beams of light of different colors can be built in a variety of ways, including by using dichroic prisms to divide the light, and light collimators to ensure that the beams of light are roughly parallel. I have consulted about dichroic mirrors and coatings for a company that uses them in the illumination systems they manufactured. Earlier in my career, I routinely created parallel beams of light in connection with my work on six-degree-of-freedom optical sensors, some of which received a “best paper” award at an international conference.

11. I also have experience with light-shutter matrix systems. In particular, I have experience with spatial light modulators (SLMs), which are pixelated devices used to create light masks. A liquid crystal display is but one type of SLM. Additionally, the graduate course I taught for many years from my textbook entitled *Guided-Wave Photonics*, XLNX-1022, and earlier from note-sets that became the book, involved extensive discussions of SLMs and their application to the field of optics. The guided-wave versions of SLM’s that I taught are pixelated

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.