



US005579476A

**United States Patent** [19]  
**Cheng et al.**

[11] **Patent Number:** **5,579,476**  
[45] **Date of Patent:** **Nov. 26, 1996**

[54] **AUTOMATIC TEST ENVIRONMENT FOR COMMUNICATIONS PROTOCOL SOFTWARE**

Beizer, Software System Testing and Quality Assurance, 1984, pp. 91-140.

[75] Inventors: **Hsu-Feng Cheng**, Hsinchu; **Jung-Ming Fang**, Taipei Hsizu, both of Taiwan

*Primary Examiner*—Robert W. Beausoliel, Jr.  
*Assistant Examiner*—Norman M. Wright  
*Attorney, Agent, or Firm*—Meltzer, Lippe Goldstein et al.

[73] Assignee: **Industrial Technology Research Institute**, Hsinchu, Taiwan

[57] **ABSTRACT**

[21] Appl. No.: **501,456**

A test system and method are disclosed for testing a communications protocol software implementation or combination of communications protocol software implementations. The test system has a memory for storing a communications protocol software implementation of a particular layer in a hierarchy of protocols. The test system has a processor for catching data outputted from the communications protocol software implementation to upper and lower layer communications protocol software. The processor is also for interpreting each frame contained in a test case file. In response to interpreting an input data frame, the processor feeds input data contained in the input data frame to the communications protocol software implementation. In response to interpreting an output data frame, the processor compares received data outputted from the communications protocol software implementation with expected output data interpreted from the output data frame, and generates a message depending on this comparison. Furthermore, the processor may simultaneously monitor the execution of the communications protocol software implementation and generate a wake-up message if the communications protocol software implementation properly or unexpectedly ceases execution. In response to receiving a wake-up message, the processor writes an appropriate message in a test report file.

[22] Filed: **Jul. 12, 1995**

**Related U.S. Application Data**

[63] Continuation of Ser. No. 139,303, Oct. 19, 1993, abandoned.

[51] **Int. Cl.<sup>6</sup>** ..... **G06F 11/00**

[52] **U.S. Cl.** ..... **395/183.08; 395/183.15**

[58] **Field of Search** ..... 395/183.08, 183.01, 395/185.02, 183.1, 183.11, 183.14, 183.15, 183.13

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

5,233,611 8/1993 Triantafyllos et al. .... 371/16.1

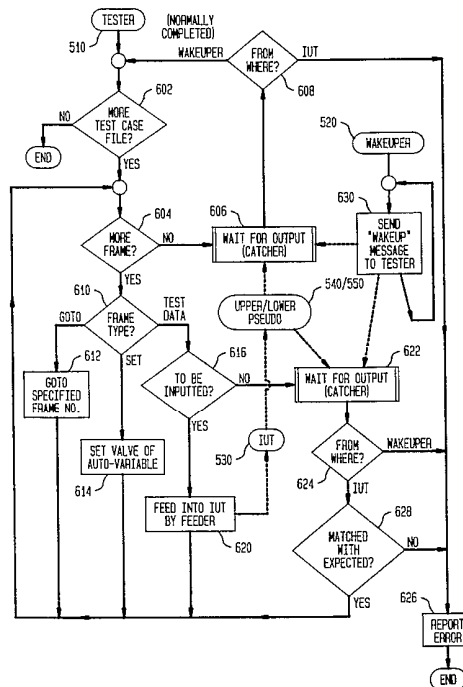
**OTHER PUBLICATIONS**

Automator Developer Guide with Examples, Jul. 1991, Version QANDG 1.0 pp. 1-4 to 1-8; 1-12 to 1-15; 4-21 to 4-24; and 5-24 to 5-34.

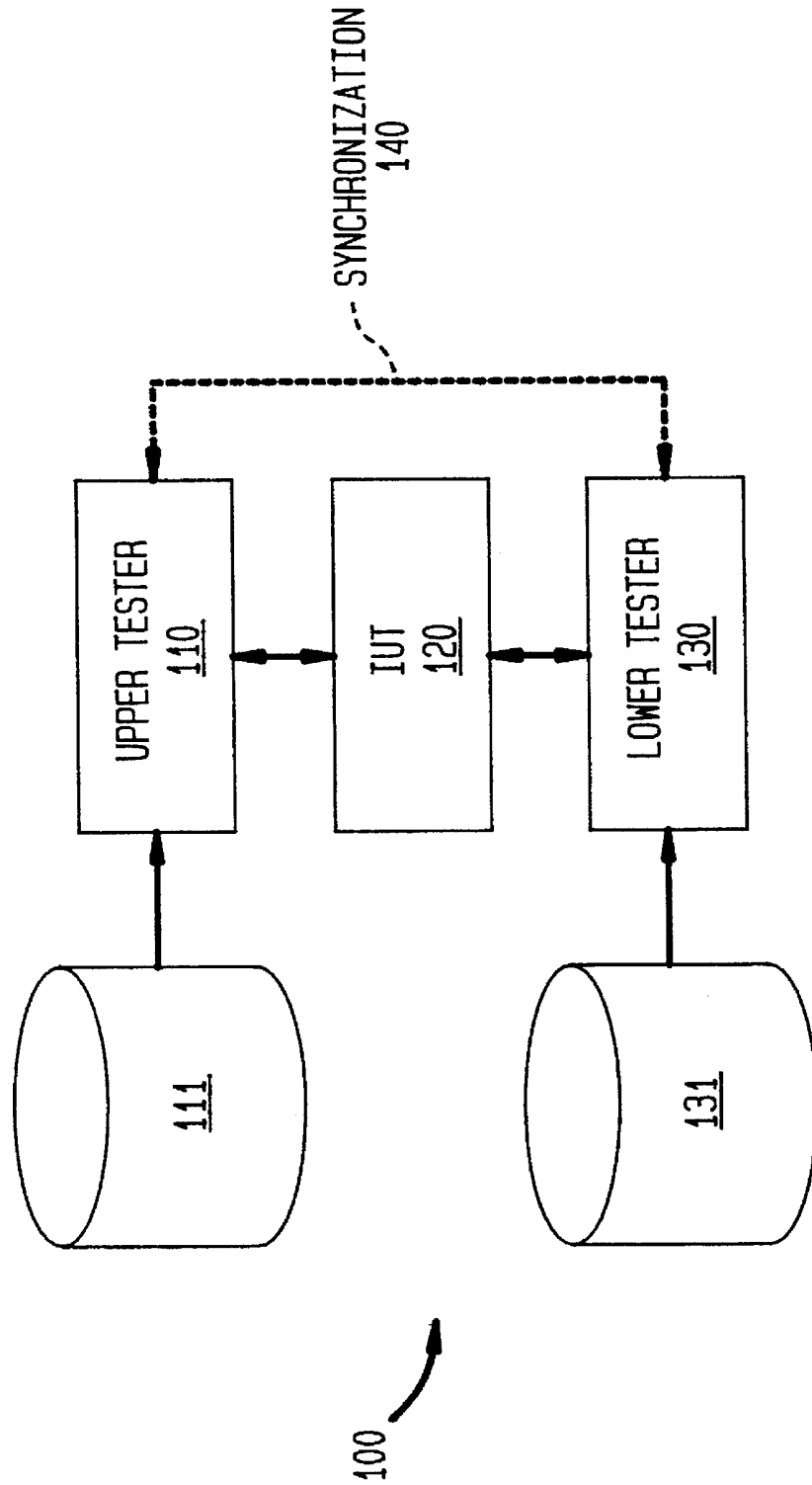
Automator Programmer Reference Manual, Jul. 1991, Version QANPR 1.0 pp. 1-7; 3-47; 4-24 to 4-25.

Automator User Guide, Jul. 1001, Version QANUG 1.0 pp. 2-2; 3-8 to 3-9; and 5-1 to 5-6.

**15 Claims, 5 Drawing Sheets**



**FIG. 1**  
(PRIOR ART)



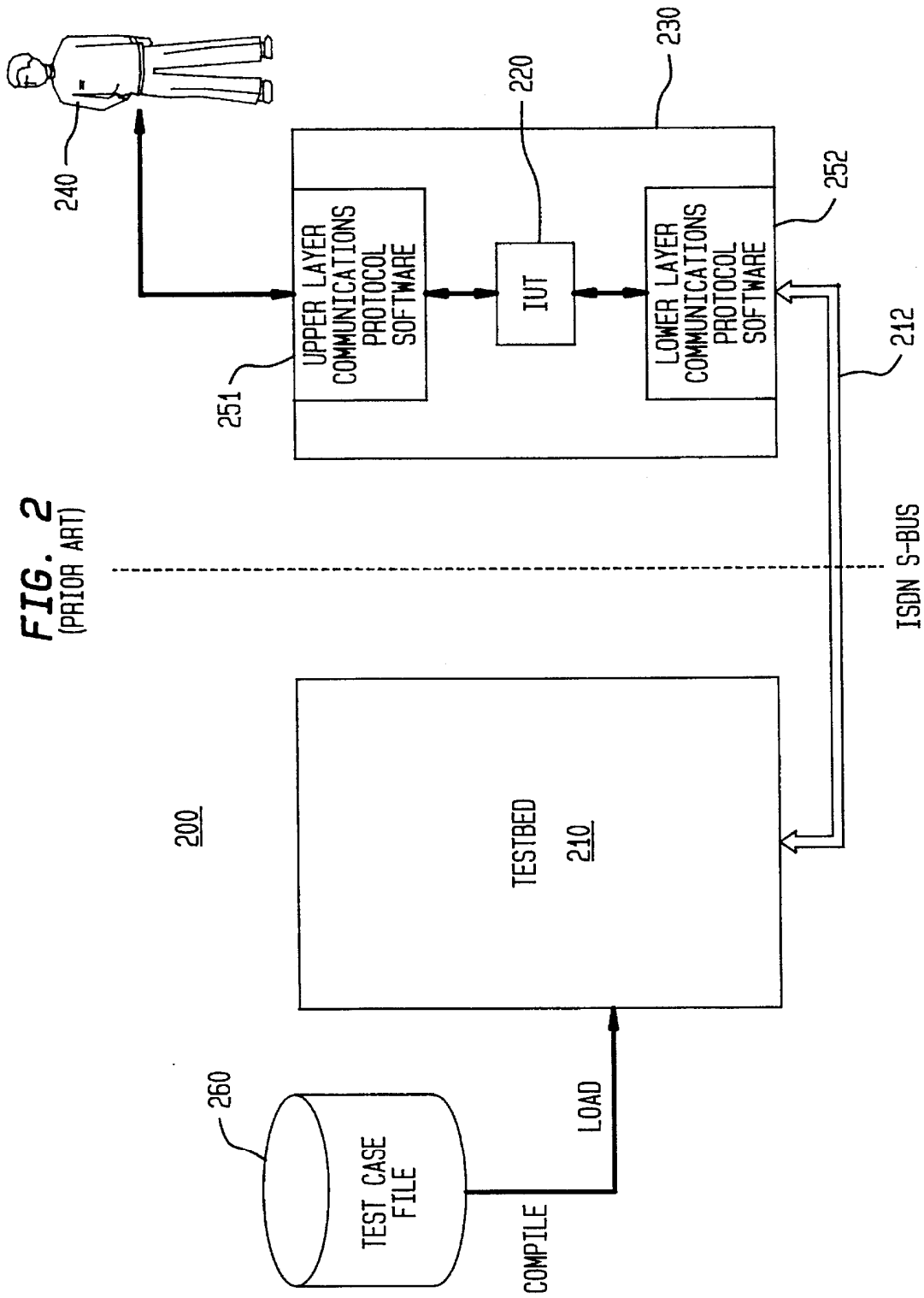


FIG. 2  
(PRIOR ART)

FIG. 3  
(PRIOR ART)

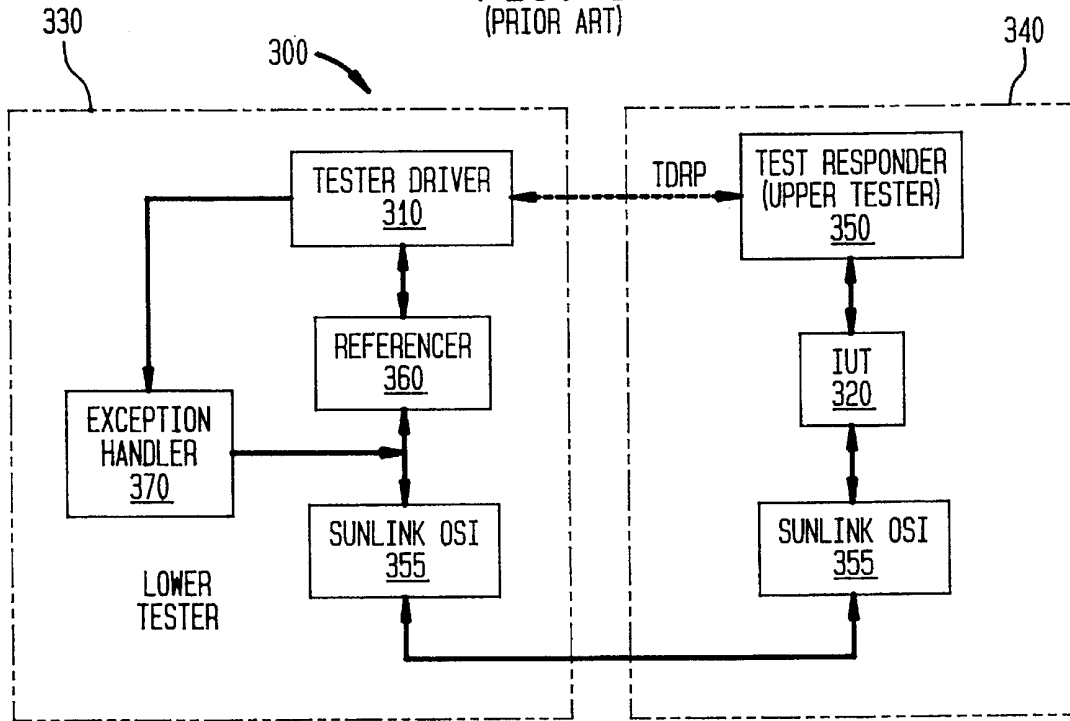


FIG. 4

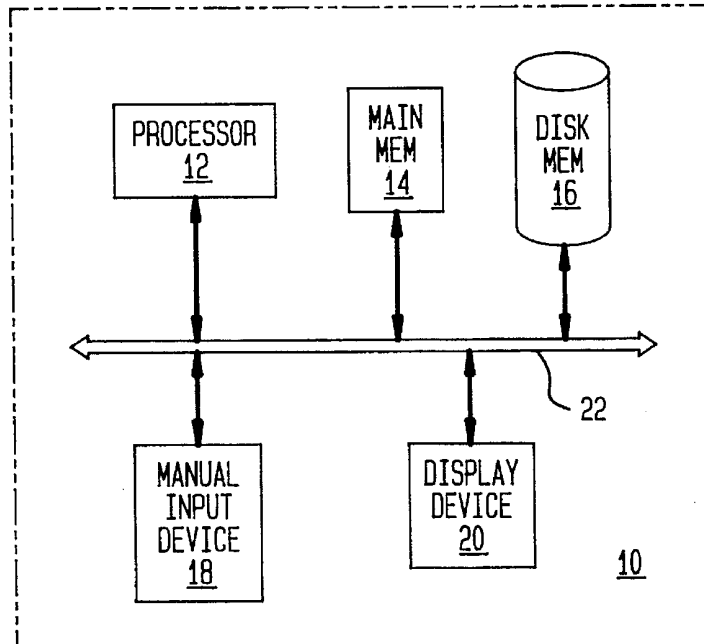
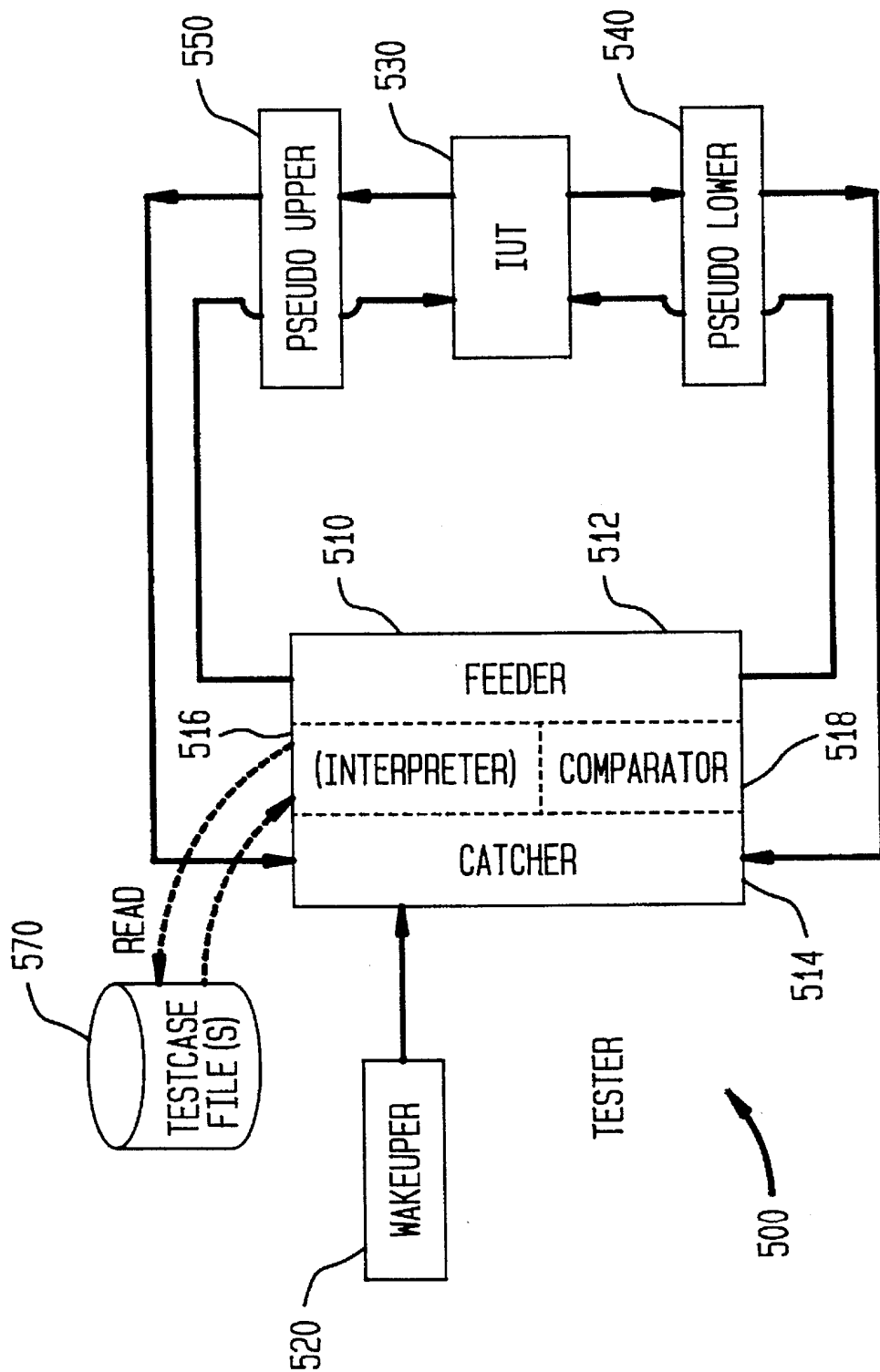


FIG. 5



# 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.