

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

UNITED STATES OF AMERICA,
U.S. Department of Justice
Antitrust Division
600 E Street, N.W., Ste. 9500
Washington, D.C. 20530

Plaintiff,

v.

THE MATHWORKS, INC.
3 Apple Hill Drive
Natick, MA 01760

and

WIND RIVER SYSTEMS, INC.,
500 Wind River Way
Alameda, CA 94501

Defendants.

Civil Action No. 02-888-A

Filed: June 21, 2002

COMPLAINT FOR EQUITABLE RELIEF FOR VIOLATION
OF SECTION 1 OF THE SHERMAN ACT (15 U.S.C. § 1)

The United States of America, acting under the direction of the Attorney General of the United States, brings this civil antitrust action to terminate an illegal agreement between Defendants The MathWorks, Inc. (“The MathWorks”) and Wind River Systems, Inc. (“Wind River”). The United States seeks equitable relief against the Defendants named herein and alleges as follows:

I. NATURE OF THE ACTION

1. Before February 16, 2001, The MathWorks and Wind River competed in the development and sale of software used by major aerospace and automotive manufacturers to design and test dynamic control systems integrated into their products. The use of dynamic control system design software tools is essential to engineers designing control systems used in products and projects ranging from commercial airplanes to manned and unmanned military aircraft to the International Space Station to anti-lock brake systems in automobiles.

2. For more than ten years, Wind River's suite of dynamic control system design software products, collectively called "MATRIXx," competed head-to-head with a similar suite of software developed and sold by The MathWorks, collectively called "Simulink." This competition between MATRIXx and Simulink was fierce, resulting in lower licensing prices, higher quality customer service, and continuing increases in product functionality. The competition between Wind River and The MathWorks' software was an important spur to continuing innovation and increased functionality in these critical engineering software tools.

3. On February 16, 2001, The MathWorks and Wind River entered into a number of agreements that had the purpose and effect of eliminating the MATRIXx product suite from the market. These agreements (hereinafter, collectively, the "MATRIXx Agreement") give The MathWorks the exclusive worldwide right to price and sell Wind River's MATRIXx for two years, transfer the customer support of MATRIXx to The MathWorks, require Wind River to stop developing and selling MATRIXx, and give The MathWorks an option to acquire MATRIXx in 2003. The MathWorks announced at the time it entered into the MATRIXx Agreement that there would be no further development of the MATRIXx products.

4. Through the MATRIXx Agreement, The MathWorks and Wind River agreed to shift dynamic control system design customers from Wind River to The MathWorks. The MathWorks made a multi-million dollar payment to Wind River, not to promote or increase sales of the MATRIXx products, but rather to eliminate its principal competitor in dynamic control system design software products and hasten transfer of MATRIXx customers to The MathWorks' products.

5. The MATRIXx Agreement is a *per se* illegal market allocation and price-fixing agreement, in violation of Section 1 of the Sherman Act (15 U.S.C. § 1), as amended. It also violates Section 1 of the Sherman Act because it has unreasonably reduced competition in the relevant markets by depriving customers of the benefits of competition between the Defendants' products, including competition based on price, service, and product innovation.

II. JURISDICTION AND VENUE

6. The Court has subject matter jurisdiction under Section 4 of the Sherman Act (15 U.S.C. § 4) and under 28 U.S.C. §§ 1331 and 1337 to prevent and restrain The MathWorks and Wind River from continuing to violate Section 1 of the Sherman Act (15 U.S.C. § 1), as amended.

7. Venue is proper in this judicial district under Section 12 of the Clayton Act (15 U.S.C. § 22) and under 28 U.S.C. § 1391(c) because The MathWorks and Wind River transact business and are found here.

III. DEFENDANTS AND INTERSTATE COMMERCE

8. Defendant The MathWorks is a privately-held corporation organized and existing under the laws of the State of Delaware, with its principal place of business in Natick, Massachusetts. The MathWorks posted revenues of approximately \$200 million for the year

2001, on sales of mathematical-based software products for numeric computation, visualization and simulation used in the design of sophisticated products. The MathWorks' principal products are Simulink and "MATLAB," The MathWorks' mathematical analysis software. In 2001, sales of The MathWorks' software used for dynamic control system design were more than \$100 million. The MathWorks transacts business and sells products to customers located in the Eastern District of Virginia.

9. Defendant Wind River is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business in Alameda, California, and a place of business in Reston, Virginia, in the Eastern District of Virginia. Wind River's principal products are operating systems for computer systems embedded into consumer products. For the year that ended December 2000, just before the MATRIXx Agreement was signed, Wind River reported worldwide revenues of \$438 million. Included in this total are approximately \$13 million in sales of Wind River's MATRIXx products. Wind River transacts business and sells products to customers located in the Eastern District of Virginia.

10. The MathWorks and Wind River sell dynamic control system design products throughout the United States and worldwide. The MathWorks and Wind River are engaged in, and their activities substantially affect, interstate commerce.

IV. IMPACT OF THE MATRIXx AGREEMENT ON TRADE AND COMMERCE

Control System Design Software

11. Dynamic control systems monitor and control operations within complex devices, such as aircraft, weapon systems, and automobiles. In aircraft, for example, the flight control system receives input from the pilot and various sensors (such as speed and altitude sensors), then

processes the input through a mathematical algorithm and provides output that optimizes the aircraft's handling and operation through the use of various components (such as engines, flaps and the rudder). Control systems have become essential to the operation of many devices, such as anti-lock brake systems for automobiles, and guidance, navigation and control systems for manned and unmanned aircraft and spacecraft.

12. Introduced approximately fifteen years ago, control system design software is used by engineers to create "virtual" models of dynamic control systems. Before such software was developed, control system design engineers had to create equations manually that mathematically represented the behavior of the control system, write appropriate software code to be installed in the on-board computers of the control systems, and then build prototypes to test the system.

13. Dynamic control design software such as MATRIXx and Simulink substantially reduces development time and engineering and program costs by automating the manual processes. For very complex systems, developing the control system can be accomplished efficiently only with dynamic control system design software. Control systems built into significant national defense weapons and aircraft have been developed using the MATRIXx products, such as flight control systems for vertical takeoff and landing tactical unmanned aerial vehicles built for the United States Navy and United States Marine Corps and weapon systems for the United States Army's tracked vehicles. The two competitors for the United States Joint Strike Fighter used MATRIXx to develop the flight control systems for their designs.

14. Firms currently using dynamic control system design software would not replace commercially available dynamic control system design software with software developed in-house

or other types of software. Nor would they consider doing without such software if prices were to rise a small but significant amount.

Relevant Markets and Market Structure

15. Prior to the MATRIXx Agreement, The MathWorks and Wind River sold competing suites of dynamic control system design software, each of which contain products that competed in three separate dynamic control system design markets:

16. The simulation software market: Simulation software is used by engineers to design, analyze and simulate dynamic control system behavior within a graphical framework that allows for the mathematical analysis necessary for software development. The MATRIXx and Simulink suites sold by Defendants each contain competing simulation software products. These products, The MathWorks' "Simulink" and Wind River's "SystemBuild," model and simulate the control system and are used in conjunction with each company's mathematical analysis software, The MathWorks' "MATLAB" and Wind River's "Xmath." In this market, total worldwide sales were approximately \$100 million in 2000. The MathWorks and Wind River are the overwhelmingly dominant providers of simulation software with a combined market share of approximately 95%.

17. The automatic code generation software market: These products automatically generate program code from the models developed with simulation software and are generally used in close integration with simulation software. Prior to the MATRIXx Agreement, The MathWorks and Wind River were the largest providers of automatic code generation software for dynamic control systems with The MathWorks' "Real Time Workshop" in the Simulink suite and Wind River's "Autocode" in the MATRIXx suite. In this market, total worldwide sales in 2000

were approximately \$16 million. The MathWorks and Wind River were the only two significant competitors, with a combined market share of approximately 84%.

18. The testing software market: Engineers use these products to test their models and their automatically generated code by simulating the function of the control system in a real time or integrated hardware and software environment. Prior to the MATRIXx Agreement, The MathWorks and Wind River competed in the market to provide products that simulate and test the control system with The MathWorks' "xPC" in the Simulink suite and Wind River's "RealSim" in the MATRIXx suite. Total worldwide sales in 2000 in this market were about \$4.4 million. The MATRIXx Agreement has given The MathWorks a market share for both products of approximately 17%. This market share, however, substantially understates the competitive importance of the Defendants' testing software products.

19. The MathWorks and Wind River's dynamic control system design software products are tightly integrated within each Defendant's own product line. Tight integration enables modifications made by customers to one phase of the design process to be automatically made through all phases of the dynamic control system design and testing process. This seamless integration—either within each Defendant's product line or through enabling interfaces between other companies' products and the Defendants' products—differentiates The MathWorks' and Wind River's dynamic control system design products from all other stand alone software products and sets the MATRIXx and Simulink products apart from all other industry offerings, positioning them as each other's closest competitors.

20. In each of these relevant product markets, The Math Works and Wind River sell products to customers located throughout the United States and worldwide. For each relevant product, the world constitutes a relevant geographic market.

Competition between MATRIXx and Simulink

21. For more than ten years, the MATRIXx and Simulink products competed head-to-head for control system design customers through lower licensing prices, better customer support, and improved product features and functionality. The companies aggressively fought for sales and market share. The MathWorks formed a team of people that met to discuss “crushing” MATRIXx. The MathWorks also competed with MATRIXx by attempting to “out innovate” it, according to The MathWorks’ CEO, by, among other things, offering shorter times between product upgrades. Likewise, MATRIXx developers incorporated new features into MATRIXx in direct response to similar features being offered by The MathWorks in competing products.

22. Prior to the MATRIXx Agreement, discounts off the list prices for MATRIXx and Simulink were subject to negotiation with customers. The MathWorks and Wind River worked to identify customers who had competitive alternatives and offered deeper discounts to win those customers away from the competing product. Decisions on discounts made by the Defendants included consideration of whether the competing The MathWorks or Wind River products were possible alternatives for the customer.

23. Purchasers of dynamic control system design software substantially benefitted from the competition between The MathWorks and Wind River during the years prior to the MATRIXx Agreement in the form of lower prices, higher quality service, and continuing improvements in the features and functionality of the products.

The MATRIXx Agreement

24. The MathWorks actively sought the MATRIXx Agreement in order to end the years of effort and money spent to “grind down” the MATRIXx products. A “Negotiation Prep Sheet,” prepared by The MathWorks’ CEO and others in anticipation of a meeting with Wind River, lists The MathWorks’ interests, including “taking competitive product off the market,” and “not letting it get into the hands of stronger competitor.”

25. In exchange for a series of payments totaling \$11,500,000, Wind River entered into the MATRIXx Agreement, thereby giving The MathWorks control over the future of MATRIXx. The agreement gives The MathWorks distribution rights for MATRIXx for a 30-month period beginning February 16, 2001, after which The MathWorks has the right to assume ownership of MATRIXx. This payment schedule is not contingent on the volume of MATRIXx products The MathWorks sells. With very limited exceptions, Wind River agreed to discontinue its marketing and sales activities, and cease all support and maintenance, with respect to MATRIXx.

26. Wind River also assigned three patents relating to MATRIXx’s automatic code generation tools to The MathWorks in exchange for \$500,000. The patents are subject to forfeiture back to Wind River in the event The MathWorks does not exercise its option on the remaining MATRIXx intellectual property. These patents encompass technology integral to MATRIXx. Wind River remains the exclusive owner of MATRIXx, with the exception of the three assigned patents.

27. The MathWorks and Wind River explicitly agreed on the level of a discount off list price available to current MATRIXx customers if such customers choose to switch to The MathWorks’ dynamic control system design software. Under the MATRIXx Agreement, for the

first year of the agreement, customers with current MATRIXx licenses that switch to The MathWorks are provided a 50% discount off the list price of The MathWorks products; during the following year, the discount drops to 25%. The MathWorks retains the right to change the list price off which the discount level is based. Absent the MATRIXx Agreement, customers transitioning from MATRIXx to The MathWorks' products could have negotiated the terms of a discount off list price, perhaps obtaining a more favorable discount level. The MATRIXx Agreement fixed the level of discount for all such customers. Such discounts also fulfilled The MathWorks' objective of encouraging customers to transition quickly to The MathWorks' products.

28. After the MATRIXx Agreement was implemented, The MathWorks was given full discretion to set and fix prices for MATRIXx products.

29. Through the MATRIXx Agreement, The MathWorks and Wind River engaged in the following conduct in order to allocate the markets for simulation software, automatic code generation software and testing software:

- (a) transferred control over MATRIXx's prices, marketing, support, and future development to The MathWorks;
- (b) agreed on the levels of discounts The MathWorks would offer to MATRIXx customers for switching to The MathWorks' products; and
- (c) agreed to eliminate Wind River from the three markets.

V. HARM TO COMPETITION

30. As a consequence of the MATRIXx Agreement, competition between Defendants has been entirely eliminated in the three markets. The MathWorks has total control over the

development and pricing of the products of its closest competitor in the dynamic control system design software markets. As one The MathWorks manager wrote in an e-mail arguing against offering a customer a discount after the MATRIXx Agreement, “I say we hang tough. [The customer] just lost their biggest piece of bargaining leverage—a competing product.” The MathWorks has encouraged MATRIXx customers to transition to The MathWorks products. In justifying the price paid to Wind River, The MathWorks counted on reaping millions of dollars of conversion revenue from customers who switched from Wind River to The MathWorks to make the MATRIXx Agreement profitable. The MathWorks has stated its intention to cease development of the MATRIXx products and to terminate support of the products in August 2003.

31. Many customers value tight integration of the products in each of the dynamic control system design software markets. Both Defendants cooperated with a small number of companies to facilitate interfaces between Defendants’ products and those companies’ products that compete with Defendants’ products in the individual markets. The competition between the MATRIXx and Simulink products provided Defendants an incentive to facilitate interoperation with third-party products, as an unwillingness by one to do so would likely advantage the other. As a consequence of the elimination of competition resulting from the MATRIXx Agreement, The MathWorks will have less incentive to provide such technical cooperation to competitors selling only individual products, thus further reducing competition for consumers who value integrated products.

32. The purpose and effect of the MATRIXx Agreement is to allocate the markets to The MathWorks, to give The MathWorks the ability to fix the prices of MATRIXx, and to permit

The MathWorks to control the future of, and enable the elimination of, the MATRIXx products. As the MATRIXx products are the principal competitive products to The MathWorks' own dynamic control system design software, the overall effect of the MATRIXx Agreement is to eliminate the competition between Defendants in the three relevant markets. Consumers are harmed both by the elimination of the MATRIXx products as a competitive alternative and the resultant reduction of competitive pressure on The MathWorks to lower prices, improve service, and continue product innovation and development of its own dynamic control system design software products.

VI. VIOLATION CHARGED

33. The MATRIXx Agreement constitutes a *per se* illegal market allocation and price-fixing agreement designed to eliminate competition for dynamic control system design software products. Defendants' agreement was not designed to, nor had the effect of, increasing economic efficiency or rendering the markets more competitive.

34. In the alternative, the MATRIXx Agreement has resulted in anticompetitive effects in the dynamic control system simulation software, automatic code generation software, and testing software markets by depriving customers of the benefits of competition between the Defendants' products, including competition based on price, service, functionality, and interfaces with other firms' products. The MATRIXx Agreement constitutes an unreasonable restraint of trade in the markets for dynamic control system simulation software, automatic code generation software, and testing software, and adversely affects interstate commerce.

35. The MATRIXx Agreement and Defendants' actions in implementing it violate Section 1 of the Sherman Act, 15 U.S.C. § 1.

VII. REQUESTED RELIEF

36. The United States seeks judgment against The MathWorks and Wind River as follows:

- (a) that the Court adjudge and decree that the MATRIXx Agreement constitutes an illegal restraint of interstate trade and commerce in violation of Section 1 of the Sherman Act and issue an injunction requiring rescission of the MATRIXx Agreement and divestiture of MATRIXx to an independent and viable competitor;
- (b) that the Defendants, their officers, directors, agents, employees and successors and all other persons acting or claiming to act on their behalf be enjoined and restrained from, in any manner, directly or indirectly, continuing, maintaining, or renewing the MATRIXx Agreement, or from engaging in any other combination, conspiracy, contract, agreement, understanding or concert of action having a similar purpose or effect, and from adopting or following any practice, plan, program, or device having a similar purpose or effect;
- (c) that the Plaintiff have such other relief as the Court may deem just and proper to redress, and prevent recurrence of, the alleged violation and to dissipate the anticompetitive effects of The MathWorks and Wind River's past violation;
- (d) that the Plaintiff recover the costs of this action.

FOR PLAINTIFF UNITED STATES

Dated: June 21, 2002

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