

# Ford

## COMPUTER INTEGRATED MANUFACTURING

**BEHIND EVERY CAR** built today are advanced electronics for controlling everything from the engine to the lights. To maintain the quality of the electronic circuits produced at a plant owned by one of its subsidiaries, Ford adopted computer integrated manufacturing (CIM). Through tools used in the plant, CIM gathers data on circuits and quickly isolates the faulty ones.

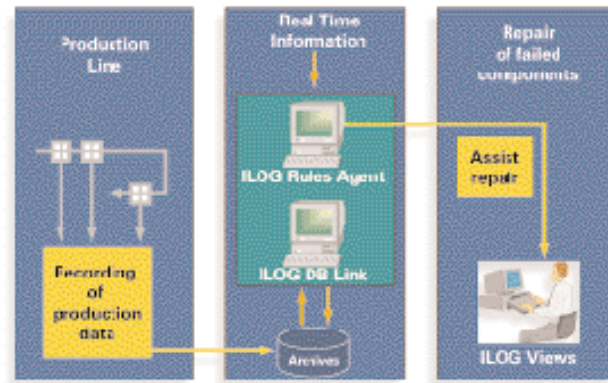
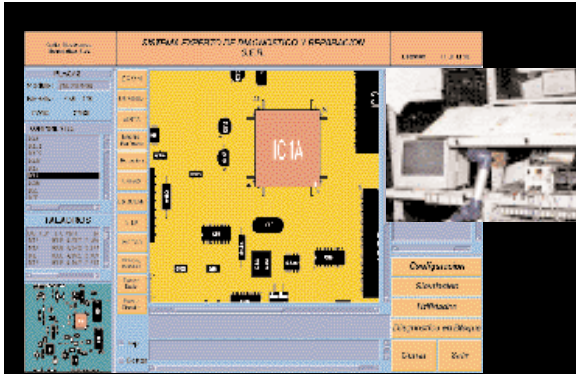
CIM uses an application called System for Diagnosis and Repair (SEDYR) to check the circuits. Developed by the subsidiary, Cadiz Electronica Systems Division (Spain), the system relies on ILOG Rules to filter data. The ILOG component uses criteria determined by engineers at the plant to search for possible malfunctions. Further aiding the engineers is an ILOG Views-based graphical user interface (GUI). It allows them to check the status of equipment throughout the plant, quickly spot faulty circuits and interact with ILOG Rules in defining filtering criteria.

The system lets the plant pull bad circuits out of production and repair them immediately, saving the company both time and money at the plant and further down the line by preventing them from being installed in cars.

*"The new system implemented with ILOG Rules and ILOG Views significantly improves our process efficiency and reduces analysis time and costs. The automatic diagnosis of electronic board failures and real-time feedback to upstream operations are crucial to our ongoing success."*

• **Ignacio Rodriguez**  
Information System  
Project Leader,  
Cadiz Electronica





## Architecture of the RAD application

### FORD

Ford Motor Inc. has been operating in Spain since the 1920s. Its Cadiz Electronica subsidiary supplies automobile electronics to all of Ford's European plants. Cadiz Electronica employs about 480 people on two production lines. One line produces 330 engine control modules per hour, and the other builds controllers for anti-lock brake system at over 170 units per hour.

### ABOUT ILOG

ILOG is a leading provider of advanced C++ and Java® software components for graphics and resource optimization. ILOG products deliver high-performance data visualization for 2D and 3D user interfaces; integer, linear and constraint solvers for resource optimization, scheduling, logistics and planning applications; dynamic rule systems for intelligent agents and real-time data flow control, and components for integrating modules with real-time and relational data sources. Founded in 1987, ILOG now employs more than 470 people in seven countries. Visit [www.ilog.com](http://www.ilog.com) for additional information.

## PRODUCTION MONITORING

SEDYR graphically shows the circuits in production, helping engineers instantly spot the defective ones. ILOG Rules agents automatically analyze the circuits in real time, while the ILOG Views GUI provides detailed information on them. The flawed boards are pulled from production and channeled to a repair zone. Further backing the system is ILOG DB Link, which gives engineers access to production data saved in a database. The system's real-time monitoring is made possible by a direct link to the main CIM computer.

## PROJECT

Cadiz Electronica and the Spanish software house Ibermatica jointly developed SEDYR over a 12-month period. The system runs on an HP 9700 under HP UX, and is connected to the CIM computer via TCP/IP.

## BENEFITS

Visualizing the circuits and spotting the failed ones, as well as a graphical representation of problems with instructions for treating failures, drastically reduced the time needed to repair boards. An additional cost-saving benefit lies in the system's ability to be used as a simulator and training tool.

France ILOG S.A. - BP 85, 9 rue de Verdun, 94253 Gentilly Cedex - Tel: +33 (0)1 49 08 35 00 - Fax: +33 (0)1 49 08 35 10 - E-mail: [info@ilog.fr](mailto:info@ilog.fr) • Germany ILOG Deutschland GmbH - Ober-Eschbacher-Strasse 109 - 61352 Bad Homburg v.d.H. - Tel.: +49 6172 40 60 - 0 - Fax: +49 6172 40 60 - 10 - E-mail: [info@ilog.de](mailto:info@ilog.de) • Japan ILOG CO., LTD - 3F YS Sanbancho Building, 24-14 Sanbancho, Chiyoda-ku, Tokyo 102-0075 - Tel: +81 3 5211 5770 - Fax: +81 3 5211 5771 - E-mail: [info@ilog.co.jp](mailto:info@ilog.co.jp) • Singapore ILOG (S) Pte Ltd - 73 Science Park Drive, #B1-15 Cintelch 1, Singapore 118254 - Tel: +65 773 06 26 - Fax: +65 773 04 39 - E-mail: [info@ilog.com.sg](mailto:info@ilog.com.sg) • Spain ILOG SA - Gobelos 21, 28023 Madrid - Tel: +34 91 710 2480 - Fax: +34 91 372 9976 - E-mail: [info@ilog.es](mailto:info@ilog.es) • UK ILOG Ltd - Gentilly House, Bracknell Beeches, Bracknell, Berkshire, RG12 7BW - Tel: +44 (0) 1344 66 16 00 - Fax: +44 (0) 1344 66 16 01 - E-mail: [info@ilog.co.uk](mailto:info@ilog.co.uk) • USA ILOG, Inc. - 1080 Linda Vista Avenue, Mountain View, CA 94043 - Tel: +1 650 567-8000 - Fax: +1 650 567-8001 - E-mail: [info@ilog.com](mailto:info@ilog.com) • ILOG Direct - 889 Alder Avenue Suite 200, Incline Village, NV 89451 - Tel: +1 775 322 7600 & +1 800 FOR ILOG - Fax: +1 775 322 3030 • URL: <http://www.ilog.com> • Representatives and distributors in other countries

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