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Years After Hype, 'Expert Systems' Paying Off For SomeBy [David Haskin](http://itmanagement.earthweb.com/feedback.php/http%3A/itmanagement.earthweb.com/netsys/article.php/1570851)January 16, 2003There is a distinctive sound production managers hear when a manufacturing process stops. It's the sound of money going down the drain. Joe Webb's client, a pleasure craft manufacturer, was hearing that dreadful sound too often."Changing the manufacturing run from, say, making a five-seater (boat) to making a 12-seater was difficult, and that made them vulnerable to losing employees," Webb said. The difficult part was reprogramming the firmware-based program logic control (PLC) for the robotic system used in the manufacturing process. Webb's solution: an expert system. Webb, who is president of Aim Services of Tennessee, a software and management consulting company, said that the system enables employees on the factory floor to answer a series of questions on their handheld. Depending on how the employee answers the first question, the system then either asks another question or provides instructions for accomplishing a specific task, such as reprogramming the PLC. The system has minimized both downtime and stress on employees, according to Webb. Expert systems are so-named because they make expertise readily available when knowledgeable human aren't. A form of artificial intelligence, expert systems employ if-then reasoning in a set of nested rules. Once touted as potentially revolutionizing business operations, you don't hear much about expert systems these days, although proponents claim more enterprises than you might expect have adopted them. But can expert systems help your enterprise run leaner and smarter? **They're Not For Everybody** Even the strongest proponents agree why expert systems didn't live up to the hype they received in the late '80s and early '90s. "There was too much technobabble that wasn't backed up by actual business cases," admitted Mike Will, director of research and development for Picodoc Corp., which develops tools for creating relatively small expert systems such as the one Webb created. Jim Melvin, CEO of Siva Corp., a business-intelligence firm, agreed. His company consults in the food service industry and he said that experiments with expert systems in that sector largely failed. "I had several large clients that were looking for the Grail of what expert systems promised and the systems just didn't deliver," Melvin said. "The clients walked away with a bad taste in their mouths after they'd spent a lot of money." Melvin said expert systems have a lot of potential but stressed, "the care and feeding of those systems is far greater than people expected." "Expert systems are expensive and cumbersome to create," Will agreed. "That's one major reason they didn't catch on at first. For advanced systems, we're talking about thousands and thousands of very expensive person hours for high-level people like mathematicians. This isn't something you farm out to an offshore programming shop." Still, Will insists that expert systems can be invaluable for enterprises willing to invest in them. "The payoff is huge," Will said. "An expert system can allow companies to do things they couldn't otherwise do." **All Shapes and Flavors** Will's company, Picodoc, deals with expert systems at the lower end of the spectrum. Systems created with Picodoc's product, PicoXpert, have no more than 500 rules and run on the Palm handheld platform. At a higher level are automated network-based expert systems. Sometimes these systems are built into other products, such as the network protocol analysis and monitoring software developed by Network Instruments and a host of its competitors. According to Douglas Smith, president of Network Instruments, the expert component starts working after the software identifies a specific event such as a delay in data transmission. "First, the system examines all the streams of data," Smith explained. "It can determine, say, whether the delay is network-based or just that somebody left to go the bathroom. It saves IT shops a lot of time. If they were doing this analysis by hand for a really big network, it could take weeks to find and solve the problem." At the high end are mainframe-based expert systems deployed by organizations such as airlines and huge shippers used for efficiently deploying equipment and crews. Will claimed that it would be exorbitantly expensive for those organizations to hire enough people to perform such on-going analyses. Yet, deploying aircraft and crews inefficiently would result in untold losses for those companies, he claimed. **ROIs: Few and Far Between** Expert systems can be an anomaly for information technology (IT) shops. For one thing, IT personnel often do relatively little of the work in developing the systems. "We got the (production) managers together and they did brainstorming sessions to determine the question and answers for the expert system," said Webb of his boatbuilding client. "Then, the information was input by an administrative assistant." Another reason that IT personnel have been slow to embrace expert systems is that there aren't many return-on-investment studies, according to Will. "I haven't seen many ROI studies," Will acknowledged. "But they might not be needed because an expert system often makes things possible that simply weren't possible before." The bottom line, Will acknowledged, is that, while expert systems can make many companies operate more efficiently, they had better be ready to invest a lot of time and, in many cases, money, developing and tweaking them. "Expert systems, particularly the large ones, are developed over years," Will said. "It's not a situation where somebody just sits down and develops an application."  |