



**PROGRESS**  
SOFTWARE

## CASE STUDY

*"In an industry where customer satisfaction means everything, we have a true competitive advantage through our relationship with Progress. They have helped us to provide a more effective and flexible solution to our clients with capabilities that would otherwise be nearly impossible to deliver."*

*Darius Knight, VP  
CaseBank Technologies*

### ***DataXtend RE Mobilizes Knowledge Management Software from CaseBank for Leading Jet Engine Manufacturer***

***CaseBank's SpotLight application offered the ideal solution for one of the world's largest jet engine manufacturers. This manufacturer needed to provide its field service engineers (FSEs) with on-demand access to diagnostic information, and the ability to share critical experiences with other FSEs in order to quickly and cost effectively resolve jet engine system failures. The challenge was that many FSEs typically work in areas where there is little if no Internet connectivity, which meant they could not access or benefit from the SpotLight application. Progress® DataXtend™ RE's bi-directional data replication technology provided the missing link, enabling CaseBank to deploy SpotLight locally to end-users. This ensured that every FSE could access the application from their laptop computer, regardless of the quality or existence of an Internet connection. The result – FSEs can now obtain the information they need on the job, when they need it most.***

#### **Background**

CaseBank Technologies was commissioned by one of the world's largest jet engine manufacturers to implement the SpotLight decision support solution to aid the manufacturer's field service engineers (FSEs). The goal was to help the FSEs share existing diagnostic knowledge on the manufacturer's most popular business-aircraft jet engine, and to capture new troubleshooting experiences for analysis.

This particular jet engine has many different specifications and configurations for numerous business jet models. The FSEs support the manufacturer's service centers and end-user customers who work on these complex aircraft systems and components. Over time, each FSE develops a unique set of experiences,

most of which could be useful in future troubleshooting situations. Unless the FSE can communicate his or her knowledge effectively, the information is never shared and cannot benefit other FSEs. This is especially true of highly reliable and complex equipment with a long in-service lifespan, such as aircraft. The result of not applying prior diagnostic solutions to elusive faults is that the same problems end up having to be solved by different people, over and over again – which means lengthy time-to-resolution, unnecessary repairs, and costly downtime.

In fact, equipment with sophisticated computer-driven systems and built-in test capabilities is often the most affected by a lack of experience sharing. As these systems are tested and failures diagnosed, many other root



causes reveal themselves. For example, certain connectors are susceptible to corrosion, certain wire bundles rub on parts, and software upgrades produce intermittent incompatibility problems. These valuable lessons are only learned through the technicians' on-the-job experience. However, without an effective way to share the accumulative experiences among FSEs, this knowledge begins and ends with each technician.

To effectively collate and manage FSE experiences, the manufacturer had to find a way to capture the knowledge gained from each service event and make it available to other technicians so they could quickly identify problems as they occurred and expedite time-to-resolution. The manufacturer turned to CaseBank to provide a solution that would improve first-time-fix performance — equipping FSEs with the tools and knowledge necessary to make an accurate diagnosis on the first visit.

CaseBank's SpotLight technology enables the manufacturer to store, organize, and retrieve prior aircraft-repair knowledge. SpotLight also allows FSEs to access solutions applied to similar problems in the past based on their responses to a series of diagnostic questions. These questions serve as an automatic "intelligent interview" to compare and reveal how a potential problem was similar to and different from all existing knowledge.

### **Keeping Engineers Connected**

The manufacturer's challenge was to decrease maintenance costs and improve the first-time-fix performance rate. FSE procedures did not provide a method for technicians to electronically record and retrieve relevant diagnostic information in a central repository. As a result, FSEs often spent countless hours troubleshooting problems that had already been solved by someone else.

By constantly re-inventing the wheel, the potential for error and misdiagnosis increased dramatically. Access to a knowledge repository of all FSE experiences that could be queried for specific data or criteria would save both time and money and reduce the risk for error. In one instance, after many hours of trying to decipher the cause of a recurring problem with a particular aircraft, an FSE suspected that a critical component had malfunctioned.

Unfortunately, the issue continued to occur after the part was replaced. It was subsequently discovered that the problem actually stemmed from a connecting pipe that was failing in a manner that made it very difficult to detect. Only later did this technician discover that one of his colleagues had experienced a similar problem years earlier.

Lowering warranty costs was also a challenge for the manufacturer. Many of its customers are under service contract agreements, making the manufacturer responsible for the cost of associated labor and parts. By not having access to previous diagnostic experience, parts were often used incorrectly or unnecessarily. This had a serious impact on both the first-time-fix rate and the overall cost of parts.

The challenge for CaseBank was ensuring that SpotLight could be used remotely in the field. While SpotLight enabled experience sharing among FSEs, as a Web-based solution, it relied on access to the Internet to receive and deliver information. FSEs typically work at airfield facilities, or in locations where there is little or no Internet connectivity. Without a reliable Internet connection, they would not be able to access the system. If FSEs could not use SpotLight as part of their daily routine, critical knowledge would not be captured, information would not be up-to-date and FSEs would not obtain the information they needed, when they



needed it most — resulting in little benefit to the customers.

This requirement is not unique to this manufacturer. Other CaseBank customers also require a solution that can remain fully functional even when "occasionally connected." The following criteria had to be addressed in order to make SpotLight a viable solution for customers requiring remote support for its technicians:

- Troubleshooting must take place where connection to the Web is not possible
- Knowledge and information on prior experiences must be distributed to staff at remote locations
- Resolutions to problems must be quick to prevent costly downtime

#### **CaseBank Stays Connected with DataXtend RE**

CaseBank turned to Progress to provide real-time access to information in this kind of occasionally connected or extreme environment. DataXtend RE's patented two-way, read-write data replication technology enables companies to distribute business applications to remote offices and mobile workers, improving the overall quality of service and system availability. In the DataXtend RE model, mobilized software and data are deployed locally to end users, just like other desktop applications. As a result, FSEs can easily access the SpotLight application to conduct diagnostic work and contribute or receive data, such as field service information and troubleshooting experiences, regardless of where they are or the quality of their Internet connection. As soon as an FSE reaches an area where there is a strong Internet connection, all the data that had been changed or added to the SpotLight application is immediately synchronized with all other SpotLight deployments — keeping information

up-to-date, without sacrificing performance.

"CaseBank helps users detect faults by posing questions around key symptoms that point to the most relevant knowledge in the SpotLight database — knowledge that would otherwise not be available to the user in that situation. With DataXtend RE's data synchronization functionality, information is available on computers when not connected to the Internet," said Darius Knight, vice president of sales and marketing, CaseBank Technologies, Inc. "This unrestricted access to knowledge is critical in situations where troubleshooting requires timely resolution without dependence on Web access or network connections."

By using the DataXtend RE-powered SpotLight application, the manufacturer can now integrate information from several aircraft data systems and provide operators and service centers with the diagnostic tools needed for troubleshooting. Users of SpotLight are primarily FSEs who service the more expensive aircraft that demand rapid and accurate support. These users engage in approximately 100 troubleshooting sessions per year, averaging four to 10 sessions per month.

The manufacturer's services group also benefits from timely information offered by the DataXtend RE -powered SpotLight application. For example, at the service center, a revolving team of individuals is sent to service aircraft at remote airports and other facilities. These smaller airports do not typically have the resources of their larger counterparts, so the ability to gain access to information through CaseBank and DataXtend RE is critical — and accelerates the maintenance process.

"By gathering the expertise derived from individual troubleshooting experiences and delivering it to the enterprise, the system can, in turn,

*The manufacturer has dramatically decreased maintenance costs and improved the first-time-fix performance rate for its jets. In one instance, the manufacturer was able to save tens of thousands of dollars in needless repairs due to the DataXtend RE-powered SpotLight application.*



provide valuable information back to other individuals at the time and place of need. SpotLight automatically captures information when field service technicians use it to help in troubleshooting situations. And, they're more likely to take the extra step to add their own knowledge and expertise into the system when they see the real benefits they get from others having done the same," said Knight.

### Results

Just how critical was this project? During one remote troubleshooting session, an FSE attempting to fix an oil leak on a business aircraft determined that the only solution to the problem was to conduct a time-consuming, expensive procedure that required the engine to be removed and sent out for repair. However, that action was

quickly aborted when, through the use of the DataXtend RE-powered SpotLight application, the system recognized the fact that a similar problem had occurred many years earlier — and that the solution was to install an easy-to-replace component in another subsystem altogether. This revelation prevented tens of thousands of dollars in needless expenses and many hours of repair time.

From CaseBank's perspective, the benefits of choosing DataXtend RE go far beyond any individual event. According to Knight, "In an industry where customer satisfaction means everything, we have a true competitive advantage through our relationship with Progress. They have helped us to provide a more effective and flexible solution to our clients with capabilities that would otherwise be nearly impossible to deliver."

## C O M P A N Y

Based in Brampton, Ontario, CaseBank Technologies is a leading developer of experience-based decision support and knowledge management software. The company's SpotLight® technology combines a proprietary software application and a suite of knowledge-based development tools. These help customers to capture past knowledge and then distribute this information in a form that provides field service teams with on-the-spot diagnostic support. CaseBank focuses on industry segments that rely on complex and high asset-value equipment — such as aerospace, automotive, healthcare, and process industries. In domains such as these, field service technicians are under considerable pressure to address problems with the utmost speed and accuracy to reduce downtime and constrain equipment costs.

### Worldwide and North American Headquarters

Progress Real Time Division, 14 Oak Park, Bedford, MA 01730 USA Tel: +1 781 280 4000

### EMEA Headquarters

Progress Software Europe B.V., Schorpioenstraat 67, 3067 GG Rotterdam, The Netherlands Tel: +31 10 286 5700

### UK and Northern Ireland

Progress Real Time Division, 210 Bath Road, Slough, Berkshire England SL1 3XE Tel: +44 1753 216 300

### Central Europe

Progress Real Time Division, Konrad-Adenauer-Str. 13, 50996 Köln, Germany Tel: +49-6171-981-127

### Italy

Progress Software, Palazzo Pitagora, Milano 3 City, 20080 Basiglio (MI), Italia Tel: +39 335 7280 156

### Spain

Progress Software, Centro Empresarial El Plantío, Ochandiano, 12, Madrid 28023 Spain Tel: +34 649 80 98 66

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