

**WebSphere.** software



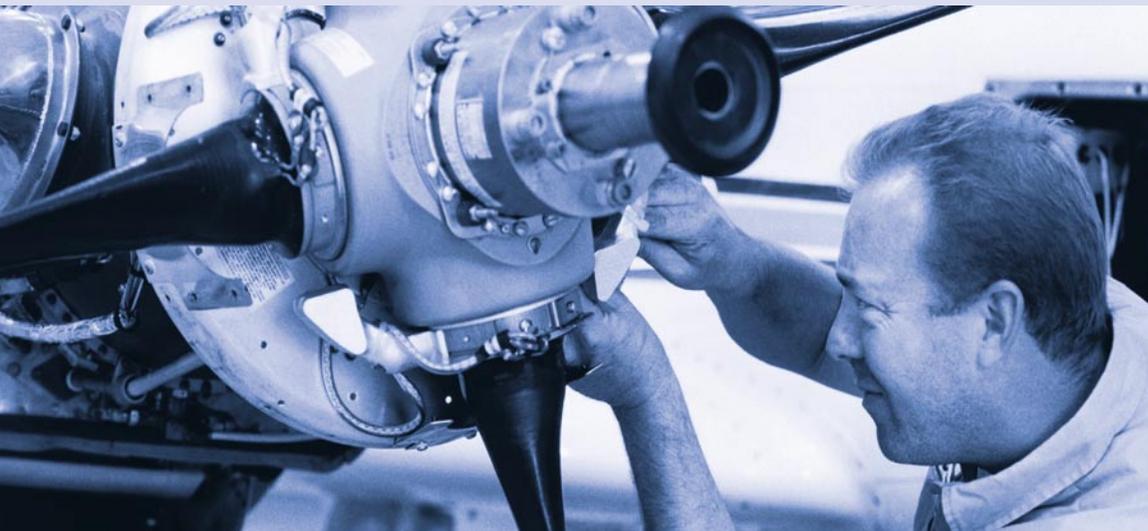
**Helping you win new service business and reduce costs across the product lifecycle.**

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It may take 1,000 people to design a product.  
And 10,000 to manufacture it. But only one to  
service it — with the potential to win or lose your  
customer forever.

That's why the technician in your auto shop, airport or electronics store offers a critical link between the manufacturer and your customer. And why IBM ServiceAfterSales solutions play an important role in Product Lifecycle Management (PLM) and in helping you to retain your customers. IBM ServiceAfterSales solutions can help lower warranty costs, provide higher service quality and increase productivity — enabling new profit streams in an increasingly competitive market.

Industrial manufacturers can extend the value of their products by embedding state-of-the-art computing systems and technologies. Technologies like wireless-enabled Internet communications, interactive voice recognition and embedded diagnostics. You can use these technologies to help improve the services you provide, manage your customer relationships more effectively, increase customer satisfaction and grow your business in the process.



IBM ServiceAfterSales solutions integrate information about product history, performance, operation, configuration, upgrade, testing, service and support throughout the product lifecycle—from concept through recycling and retirement. So you can provide your customers with a unique ownership experience—one that helps boost your brand loyalty through improved product reliability and less downtime. You can benefit from reduced liability, lower operation costs and increased technician productivity.

IBM ServiceAfterSales solutions include a combination of hardware, software and services based on industry-leading IBM infrastructure middleware, which can include:

- *WebSphere® software from IBM, including IBM WebSphere Application Server, IBM WebSphere Portal, WebSphere business integration software from IBM, WebSphere MQ software from IBM and IBM WebSphere Everyplace™*
- *IBM DB2® Universal Database™ data management software*
- *Lotus® software from IBM, including IBM Lotus Notes®, IBM Lotus Sametime® and knowledge management applications*

- *Tivoli® systems management solutions from IBM to support security and system integrity*
- *@server and storage solutions from IBM*
- *Desktop and IBM ThinkPad® laptop computers*
- *Independent software vendor (ISV) solutions from Dassault Systèmes, Enigma and other IBM Business Partners*
- *Services for consulting, development, implementation, rollout and operation*

IBM ServiceAfterSales solutions can help you put the right tools into the right hands—so your service technicians can address individual service requirements quickly and efficiently. How does it all come together? Scenarios from the automotive, aerospace, defense and electronics industries show you some of the ways you can deploy IBM ServiceAfterSales solutions to deliver more value to your customers—and to your business.



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## An intelligent diagnostics system in action

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### Activity

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Server-based diagnostics

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### Software

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Java™ 2 Platform, Enterprise Edition (J2EE) technology-compliant application, WebSphere e-business infrastructure software, IBM DB2® data management software and IBM VisualAge® for Java

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### Hardware

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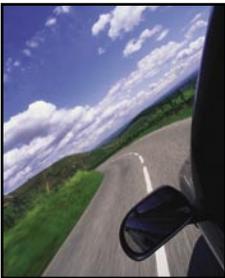
IBM @server models for UNIX®, Microsoft® Windows NT®, Windows® 2000 and Linux® platforms; network infrastructure, including wireless and mobile telephones, mass storage solutions, workstations and PCs

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The service light appeared on the control panel of your customer's car on his way to work. He brought the car to your repair shop to have a service technician diagnose and rectify the problem.

### Starting a diagnostics session at the repair center

Once in the service bay, the service technician can connect the vehicle to a central server that communicates with the car's



onboard electronic control units, through a diagnostic plug. Vehicle information is transmitted over a standard phone line or other telecommunications technology, like the Internet — to a diagnostics application residing on the server. The server identifies the car's symptoms and detects fault codes or DTCs—special signals automatically generated by the car's onboard electronic systems to help identify problems.

### Guiding the technician

Industry-leading solutions from IBM guide your service technician as he diagnoses the problem:

- *The diagnostic system prompts the service technician to put the key into the ignition.*
- *When he turns the key to on, information from the engine and gear-box control units identifies your customer's car. The central server, then, sends the vehicle's bill of material to the technician.*
- *When the car doesn't start, the system prompts your technician to select an appropriate observation—for example, Engine does not start.*
- *The system then instructs the service technician to perform particular manual tests.*

## Verification

After one of the test procedures, your technician follows the server-based system's instructions to verify certain wiring connectors:

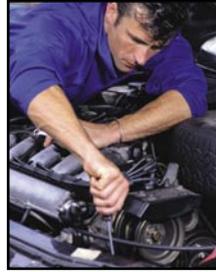
- *The engine-controller connector*
- *The oil-distributor connector*
- *The high-pressure pump connector*

Following these instructions, the technician discovers that the high-pressure pump connector is loose. He tightens the connection and the repair is complete—in only 10 minutes.

## Collaborating with the master technician

It's a safe bet that the service manager will want to know the potential impact of this problem on other fleet vehicles. So your service technician contacts a master technician at the call center, who reviews historical and engineering data. She tells the service technician that a very small percentage of vehicles has experienced this problem. She describes a general pattern in vehicle specifics, which identifies the vehicles where this problem is most likely to occur.

The service manager shares this information with the fleet owner-operator. In response—on particular fleet models—electronic monitoring capabilities are programmed to



predict this problem early, before major mechanical problems occur. Using this intelligent system helps reduce the need to replace major engine components. For all new fleet vehicles, prognostics and onboard diagnostics systems allow technicians to schedule service early—helping to avoid costly, frustrating breakdowns and emergency maintenance.

## A learning system to help others in the future

The system's diagnostic information is fed back to a central diagnostic database that other master technicians, who may face similar problems in the future, can access. Design engineers can also use this information, while exploring features to improve existing or upcoming product lines. Because they've kept detailed statistics showing how intelligent diagnostics during warranty helped save money on repairs, financial and engineering managers can easily justify incorporating certain features. To prevent potential failures in the future. And to help keep their company's brand ahead of the competition.

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## A manufacturing Web portal in action

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### Activity

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Customer support

### IBM Business Partners

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Dassault Systèmes, Enigma, Siebel, i2

### Software

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WebSphere Portal and WebSphere business integration software, DB2 data management software, Lotus knowledge management software, Tivoli Policy Director

### Hardware

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IBM @server models for IBM pSeries™ and IBM xSeries™, mass storage solutions, workstations, PCs

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## Create and view service requests for an aircraft

Customer service representatives (CSRs) at your aircraft manufacturing company use a Web portal to submit their service requests. These service requests must include a priority code and a publications change request (PCR) to describe how and when the aircraft's technical publications need to be updated.



First, CSRs are prompted to select a priority code for each service request. These include:

- *AOG – aircraft on ground, needs to be repaired in 24 hours or less*
- *High – needs to be repaired in two to three days*
- *Medium – needs to be settled in one week*
- *Low – needs to be resolved in two weeks*

In this case, your CSR selects AOG, the highest priority level. To assist in problem determination, the system could have prompted her to search for symptoms described by the customer. But the customer had already identified the exact problem — a jammed exit doorway. So the CSR simply selected this description, and the system displayed a service order that details all parts and instructions necessary to make the repair.

### View the latest technical publications online

Manufacturing specialists are responsible for maintaining up-to-date continuous reliability statistics about aircraft parts for each tail number in your fleet. With access to realtime views of each aircraft's technical publications

through a portal containing brief descriptions, estimated and actual dates of updates, they can complete their projects faster and more thoroughly than ever before.

### **Entering the latest statistics**

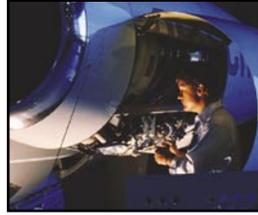
As one of your specialists starts working on a weekly statistical report for a manager, he opens the Web portal and checks for two types of aircraft information:

- *Fleet statistics (hours and cycles of takeoffs and landings)*
- *Reliability statistics (time to failure for specific parts)*

When the system retrieves this information and displays it on the screen, he sees the results:

- *A calculation of the number of days needed to replace or repair certain damaged parts*
- *Part life shown in cycles and hours*

In minutes, your specialist creates a chart showing how many parts have failed over the past week, how long the repairs took and what the part life was for each failed item. This helps with planning and scheduling operational and maintenance events.



### **Your spare parts are just a click away**

When your maintenance staff receives an aircraft service request, they use the Web portal to access a comprehensive parts catalog. This online catalog includes illustrations of each part, with links to related service bulletins and special images, tools or other information required for the repair. Your maintenance technicians can browse through this illustrated parts catalog to find price and availability information. They can shop online to secure the best prices, and then later view their orders and check for any issues that need to be resolved, before the parts are shipped and the repairs are made.

### **Online manuals**

When they're ready to make repairs, your maintenance technicians can use online fault isolation and maintenance manuals to help distinguish actual problems from reported symptoms—and locate repair and replacement procedures for various aircraft parts. They can also find service bulletins you've

issued and reduce the incidence of good parts removed in error and aircraft out-of-service time. Your technicians' productivity is increased because they aren't wasting valuable time searching for information in potentially outdated print documents.

### **Technical education and training**

When your maintenance technicians need new education or training, they use the portal to locate available courses, class dates and locations. They enroll through the portal and then track their enrollment status online. This improves training acceptance, makes information about the most current education offerings and schedules more readily available and minimizes time away from the work site.

### **Present your customers with a view of available products and services**

As marketing manager for an aircraft manufacturer you leverage new Internet technologies to post overviews of all your aircrafts' specifications and models including pictures, illustrations and a list of your services. This information provides you with another widely viewed marketing medium to present and increase awareness of your products and services.

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## **A mechanics' portal in action**

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### **Activity**

Supporting the technician

### **IBM Business Partner**

Dassault Systèmes

### **Software**

Mechanics' portal solution built on WebSphere Application Server, WebSphere Portal and WebSphere business integration software, in conjunction with DB2 data management software

### **Hardware**

IBM @server models for pSeries and xSeries, mass storage networks, workstations, PCs, personal digital assistants (PDAs), personal computer tablets

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As your master mechanic gets ready to remove a distance-measuring device from an aircraft, he requests relevant information and processes from the mechanics' portal. Information is collected from a variety of sources, including the Internet and various back-end databases. The technician views the resulting material as a composite, Web-based application.



When a part is replaced on an aircraft, information about the removed part, the replacement part and the assembly is recorded in a real-world instance database. This database information includes details like the part's serial number, and its maintenance, repair and sourcing history. Pulling from a real-world instance database, the system stores the part number and serial number of the distance-measuring device that's being removed. The system presents a work order to the mechanic, instructing him to remove the defective part and replace it with a new one.

When the technician removes the old part, he registers its removal by scanning its bar code into the system. A new part is selected, scanned and then installed on the aircraft. The system shows this new part has a software component that needs to be calibrated to the aircraft's specification. So the work instruction directs the technician to download new software onto the device. This software is downloaded through the mechanics' portal, and then it can directly update the distance-measuring probe. Every step the mechanic takes is recorded for auditing purposes and air-worthiness records.



A mechanics' portal can run on a variety of devices, including personal and laptop computers, PDAs and personal computer tablets. Mechanics can use touchscreens to respond to instructions. When input is required, it comes from attached barcodes, Radio Frequency Identity Tags (RFID) or from other readers. The system can communicate over a variety of network technologies, including regular wired Ethernet or wireless infrastructures (802.11B, GRPS, BlueTooth). The core technology employed on the UNIX technology-based server includes J2EE technology-compliant IBM WebSphere Application Server, WebSphere Portal and WebSphere business integration solutions. And you can use the DB2 system to store important, system-critical information. The client component of a mechanics' portal can run on multiplatforms, including both Java and Web clients.

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## **A remote electronics monitoring and control system in action**

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### **Activity**

Cost reduction with proactive remote appliance operation

### **IBM Business Partners**

Dassault Systèmes, Silicon Energy

### **Software**

IBM WebSphere Everyplace, Embedded Edition; IBM WebSphere MQ software; IBM WebSphere Transcoding Publisher; Open Systems Gateway Initiative software stack (OSGi); wireless gateway software from IBM; IBM Tivoli Device Management System (DMS)

### **Hardware**

Intelligent appliances, servers, storage networks, workstations, PCs

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Your customer, a resort company, manages a 200-unit condominium complex in a popular Florida resort area. Each lodging unit at the resort is equipped with a new, Web-enabled air conditioner that the resort company can monitor and control remotely. About one hour before guests arrive, they can change the air conditioner setting in each unit from vacant to occupied. Electricity costs are reduced and the time spent preparing the units for rental is minimized.

You also decide to offer service and maintenance contracts based on remote control service for air conditioners, sending individual unit control data to your service and maintenance center. Because fault codes and other diagnostic alerts can be sent simultaneously to mobile phones, e-mail or fax, you can provide high-quality, efficient service and schedule service appointments more quickly. And fix problems the first time.

Unit performance and maintenance information gathered over time allows you to anticipate and address potential future problems. You can also modify products to fit your customers' needs. The result? Increased customer satisfaction and brand loyalty.

### **Bringing it all together**

The way that customers, manufacturers, suppliers and service providers interact has fundamentally changed. To succeed as a services-based organization today, you must know your customers, their usage histories and the current performance level of the products they're using. And you must be able to anticipate their service needs. Business integration solutions from IBM and IBM Business Partners can help you align technology with strategy and better manage your knowledge assets. So you can provide a better Web experience for your customers—to help increase retention rates, acquire new customers, as you grow your revenues with creative service-oriented ideas.

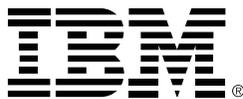


### **For more information**

Learn more about the technologies and products used in IBM ServiceAfterSales solutions—including IBM WebSphere Portal for Multiplatforms, IBM WebSphere Commerce and IBM WebSphere Business Integration solutions. To get started quickly, visit:

**[ibm.com/websphere/industries](http://ibm.com/websphere/industries)** or

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