

# **Case Study: Raytheon Professional Services Brings Large-Scale eLearning to the Retail Auto Industry**

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Much research in the Learning-on-Demand (LoD) program has focused on the current and potential role of learning and learning technology in improving business performance in the extended enterprise. For instance, the August 2005 report, *Improving Business Performance through Partner Learning*, examined the role of learning in a wide range of channel-partner and other partner arrangements. Other LoD publications have examined the growing role of learning outsourcing as a way to improve the quality and cost-effectiveness of learning.

This travel report supplements our earlier work. It provides a case study of partner learning as well as learning outsourcing, focusing on the long-term partnership that Raytheon Professional Services LLC (RPS) has built with a major automaker, providing a wide range of learning services.

What are the factors that influence owners' satisfaction with their vehicles? Product design, performance, reliability, and affordability are all important, but so are the experiences that customers have well after the sale in the service department at the dealership. Because it's an article of faith in the auto industry that owner satisfaction generally translates into owner loyalty, automakers do everything within their power to influence those service experiences positively.

For one global manufacturer, the end of the twentieth century brought into sharp focus the challenge of providing effective technical training to the 70 000 service technicians throughout the United States at 7000 franchise dealerships. The automaker decided that the solution lay in an extensive learning-outsourcing contract that the automaker made with Raytheon Professional Services.

RPS is the commercial training unit of Raytheon Company—a global leader in defense electronics and technical services. Building on its foundation of providing technical services and training under government contracts, Raytheon has expanded its client roster to the commercial sector and has become a major learning-outsourcing firm, particularly for global firms like this automaker with workforce training needs that span national borders and myriad languages and cultural frameworks (See *Learning Outsourcing: Strategic Opportunity*).

## **BACKGROUND**

In 1998, the automaker was facing substantial challenges as it forecast its training needs for the new century. The application of advanced technologies (most of them electronics based) into new vehicles was increasing rapidly. More frequent vehicle introductions and the higher technical sophistication of those vehicles necessitated updating the skills of dealership-service technicians at a faster pace. At that time, the primary way that technicians received training was through instructor-led classroom or laboratory sessions at a network of 23 dedicated company-operated training centers and 170 affiliated schools (primarily community colleges) throughout the country.

To attend training, the technician would travel to the nearest training location, which meant postponing customer work at hand for a course that lasted for one or two days. And for technicians coming from dealerships in rural or remote areas, such attendance could mean that overnight accommodations were necessary. So, although the automaker provided the training to its dealership technicians at no charge, the average cost to the franchise dealer was \$550 for each day's training to cover the expense of the technician's wages, travel, and lost productivity. Such costs were an important factor in explaining why many of the automaker's retail-service technicians were not enrolling in as many of the available courses as the automaker prescribed.

However, technicians who have less training than they need, jeopardize customer satisfaction, which, in turn, imperils customer brand loyalty. Additionally, warranty costs tend to escalate as inadequately prepared technicians risk "swapping out" damaged components for new replacement parts, instead of performing the recommended repair.

Insufficient technician training is most certainly costly, but the price of providing increased training to accommodate demand forecasts was not inconsequential; in fact, it was high enough to give the automaker pause. Looking ahead, the company predicted that its overall training costs (for instructor wages and facilities and materials printing and distribution costs) would increase by nearly 38% in just the next four years. That rise would likely accelerate in subsequent years, because the facilities costs alone (rent, maintenance, utilities, upgrading) were likely to increase ninefold by 2012.

Adding to the challenges was the fact that the automaker had been using a mainframe-based training-management system that was not Y2K compliant and provided no real-time status reporting. Although a call center was in place to offer assistance, it was costly to maintain and provided limited availability.

## **STRATEGIC CONTEXT**

The solution to these myriad challenges came in the form of the "Service Technical College" (STC), created, delivered and managed for the automaker by Raytheon. Today, the automaker is able to provide more training to its diverse body of technicians, at a cost that is 30% lower than the cost in 1999. Because much of the training is delivered to the technician via computer, the costs to the dealer have also decreased substantially. Technicians can now increase their product knowledge without incurring travel expenses or removing themselves from productive work in the service bay for a day or more at a time.

In building the STC, Raytheon needed to do more than satisfy the needs of its direct customer, the automaker. It had to accommodate the expectations of a number of stakeholders, as Table 1 shows. Fortunately, those stakeholders ultimately all have the same goal: to serve the customers who come into the automaker's dealerships in a way that will provide them with a high-quality experience—before, during, and after the sale (including maintenance and repair work).

**Table 1  
BUSINESS AND LEARNING NEEDS OF MULTIPLE STAKEHOLDERS**

<b>Stakeholders</b>	<b>Business Objectives</b>	<b>Learning Needs</b>
Automaker's service operations	<ul style="list-style-type: none"> <li>• Increase customer satisfaction and loyalty among vehicle owners.</li> <li>• Reduce warranty costs (fix-it-right-the-first-time philosophy can have major impact).</li> <li>• Make training programs as cost-effective as possible by leveraging capabilities and infrastructure where feasible.</li> <li>• Enhance the recruitment and retention of dealership technicians.</li> </ul>	<ul style="list-style-type: none"> <li>• High-quality customer service and technical training to meet customer needs</li> <li>• Flexible training program that minimizes technicians' time away from the service bay, which slows customer-service response time</li> <li>• Training program that appeals to and meets the needs of service technicians, fostering greater participation and high numbers of knowledgeable and well trained personnel</li> </ul>
Dealer principals and managers	<ul style="list-style-type: none"> <li>• Minimize training costs related to:               <ul style="list-style-type: none"> <li>— Technician wages, travel, and accommodations</li> <li>— Equipment (for example, computers) procurement</li> <li>— Lost revenue or lost productivity when technician is out of the service bay.</li> </ul> </li> <li>• Enhance ability to meet the automaker's requirements for service-training standards.</li> <li>• Increase service-customer satisfaction.</li> <li>• Increase fix-it-right-the-first-time rate.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased use of appropriate technology in blended learning mix</li> <li>• Effective eLearning courses and performance support</li> <li>• Engaging online learning materials with easy technician access</li> </ul>
Service Technicians	<ul style="list-style-type: none"> <li>• Maximize earnings.</li> <li>• Gain new knowledge, skills, and capabilities.</li> <li>• Achieve desired certification levels.</li> <li>• Improve career-advancement potential.</li> </ul>	<ul style="list-style-type: none"> <li>• Easy-to-understand, relevant information</li> <li>• Easy-to-access information</li> </ul>
Dealer Fixed Operations Advisory Board (DFOAB) and Service Training Readiness Council	<ul style="list-style-type: none"> <li>• Identify training requirements so that technicians can service emerging vehicle technologies.</li> <li>• Establish service-training standards to ensure that every dealership can provide satisfactory service on customers' vehicles.</li> <li>• Promote effective service-personnel recruitment and retention among dealerships.</li> </ul>	<ul style="list-style-type: none"> <li>• Effective knowledge sharing and collaboration</li> <li>• Flexible learning offerings with appropriate curriculum and infrastructure to deliver engaging learning solutions that help technicians meet more demanding requirements</li> </ul>

Source: SRIC-BI

## APPROACHES AND SOLUTIONS

The outsourcing partnership between the automaker and Raytheon started in April 1999, beginning a year-long transition period. Raytheon immediately set out to design a learning-management system (LMS) that would foster the migration away from instructor-led training in a classroom setting to computer-based training, including Web-based training and interactive distance learning.

Where possible, training would be self-service, so that technicians could avail themselves of the information while at the dealership or other location with computer access. Thus the need to travel off-site to a learning center would decrease significantly. Training materials and even course catalogs would be downloadable, thereby trimming fulfillment costs considerably. The new system also needed to provide real-time reporting of learner status.

Training content developed simultaneously with the learning system. A truly integrated product team brought together the automaker's subject-matter experts with Raytheon instructional-systems designers, technical writers, graphic artists and instructors, as well as video and Web-design producers. Considerable effort focused on (and continues to focus on) identification and analysis of training objectives, so as to select the optimum delivery approach for each objective, thereby creating a blended learning approach. (See Table 2.)

Since the STC launched in 1999, the evolution in delivery of training has been significant. Initially, the technicians received more than half their training at the learning centers in instructor-led sessions. Videos (on VHS format) provided almost all the remaining training, with a very small proportion delivered via CDs.

By the sixth year of the program, 86% of the training was delivered via computer-based training (including Web-based training and satellite-based interactive distance learning), and 1% was delivered via printed materials. Today, the basic idea is to educate the technicians as much as possible via computer, preparing them for advanced training and final evaluation of their hands-on skills by instructors and facilitators at training centers. Thus, the training-center experience has become a highly productive final step rather than an initial step in each course of study. (See Figure 1.)

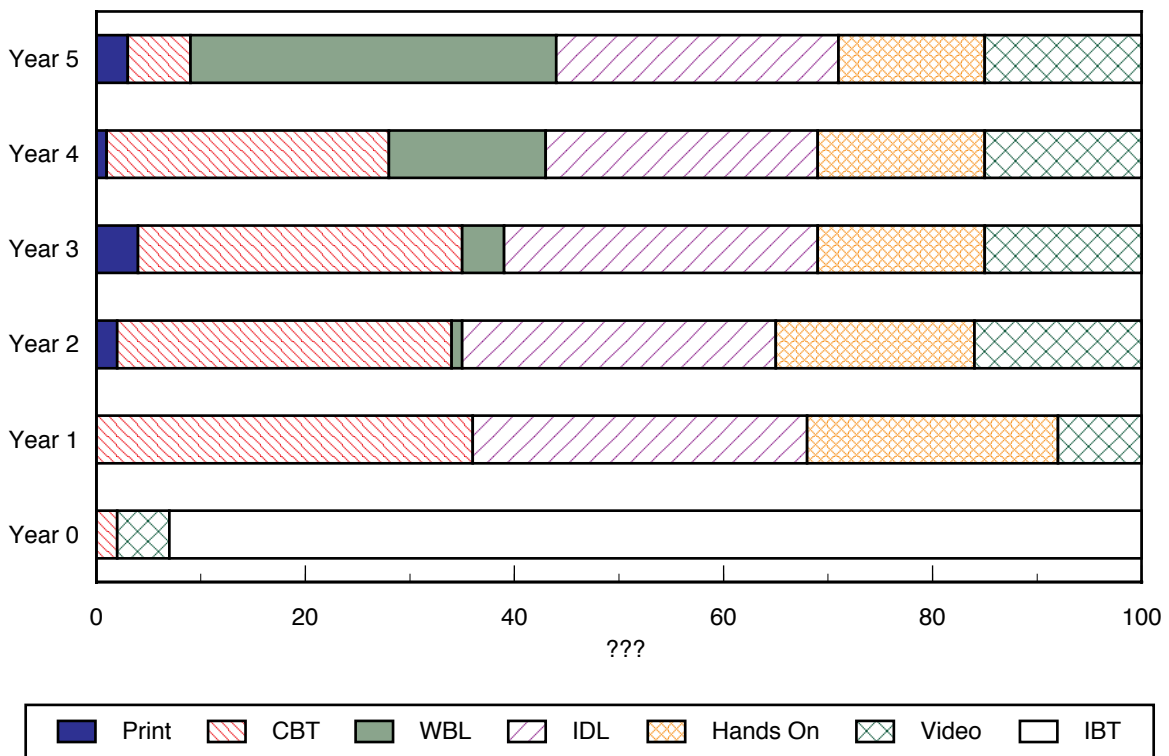
**Table 2  
DELIVERY METHODS LINKED TO TRAINING OBJECTIVES**

Delivery Method	Location		Objectives					
	Dealer	Training Facility	Raise Awareness	Teach Function and Theory	Teach Diagnostic Procedures	Practice Skills	Test Knowledge and Skills	Update Emerging Issues
Video-based know-how	•		•					
Computer-based training	•			•				
Print-based training	•		•	•				
Interactive distance learning	•				•			•
Simulations	•				•	•	•	
Hands-on training		•				•	•	•
Certification assessment		•					•	
Know-how interface distance-learning seminars	•		•					•
TECHAssist*	•		•	•	•			•
Video-based know-how								

\* See text, page 6.

Source: Raytheon Professional Services

**Figure 1**  
**BLENDED TRAINING APPROACH MAKES MORE TRAINING AVAILABLE AT THE DEALERSHIP**



Note: CBT = Computer-Based Training; WBL = Web-Based Learning; IDL = Interactive Distance Learning; IBT = Instructor-Based Learning

Source: Raytheon Professional Services

One element of the STC blended-learning program is TECHAssist, which provides just-in-time support. TECHAssists are short, over-the-Web programs that deliver key service and product information. The programs include text, pictures, video, and digital animations. Some of the TECHAssist modules allow technicians to refresh and reinforce skills that they use rarely, and other modules deal with emerging issues that highlight new tools and technology and focus on late-breaking information.

Another increasingly popular form of online learning is simulations. During some of the simulations, the technicians receive work orders or specific tasks that they must complete, and they must select the tools to use for diagnosing and fixing the problems. A “virtual coach” is also available that can inform, challenge, or provide assistance—similar to what an instructor would do in a classroom setting. As the simulation tracks learner results, the underlying LMS

system collects data that can show how well the learners do, show where they might have problems, point to areas that need attention, and require follow-up help.

Although the fastest growth has been in Web-based training, satellite-based Interactive Distance Learning (IDL) plays a significant role and now accounts for more than a quarter of all STC training. According to Raytheon senior technical officer Allan Blascak, STC now records the live satellite-delivered broadcasts and stores them in a digital repository that is searchable and accessible over the Web, thus providing greater flexibility and convenience because technician training is available anytime, anywhere.

Such a technology-based blended approach to learning was gaining acceptance among major corporations when STC launched. However, the automotive industry had never attempted it on such a large scale—in 1998, bringing training to nearly 70 000 individuals at more than 7000 locations.

The automaker fully expects that Raytheon will continually improve its processes and the services that it delivers. In other words, the automaker expects Raytheon to provide a greater volume of more effective training while reducing costs through greater efficiencies.

Raytheon has stepped up to this challenge, generating increasing value over time to the automaker as a result of its increasingly close collaboration with both the automaker and dealership management. As Raytheon deepens its understanding of the needs of both the automaker and its dealerships, it is increasingly able to propose and develop advanced eLearning solutions.

## **Business Impacts and Lessons Learned**

A number of performance parameters ensure that Raytheon meets both the business and the learning objectives in the contract, as is true with most learning and training outsourcing contracts. The most common measurement is contact hours, and indeed, this number has grown significantly. In year six of STC's operation, twice as many technicians took part in authorized training as in year one. Learner satisfaction has increased, as well. Level 1 evaluations, rating the opinions of the participants in the blended-learning approach, have increased each year that STC has been operational, and now stands at 4.45 on a 5-point scale.

Additionally, Raytheon and the automaker looked deeper into other available data to assess the effectiveness of the blended training. They noted improvements in various important metrics, including the following:

- *Customer satisfaction ratings.* They asked every customer to complete a satisfaction survey following each service visit. They tracked carefully the results of those surveys, and ratings have been improving as a growing number of technicians have completed a larger number of courses.

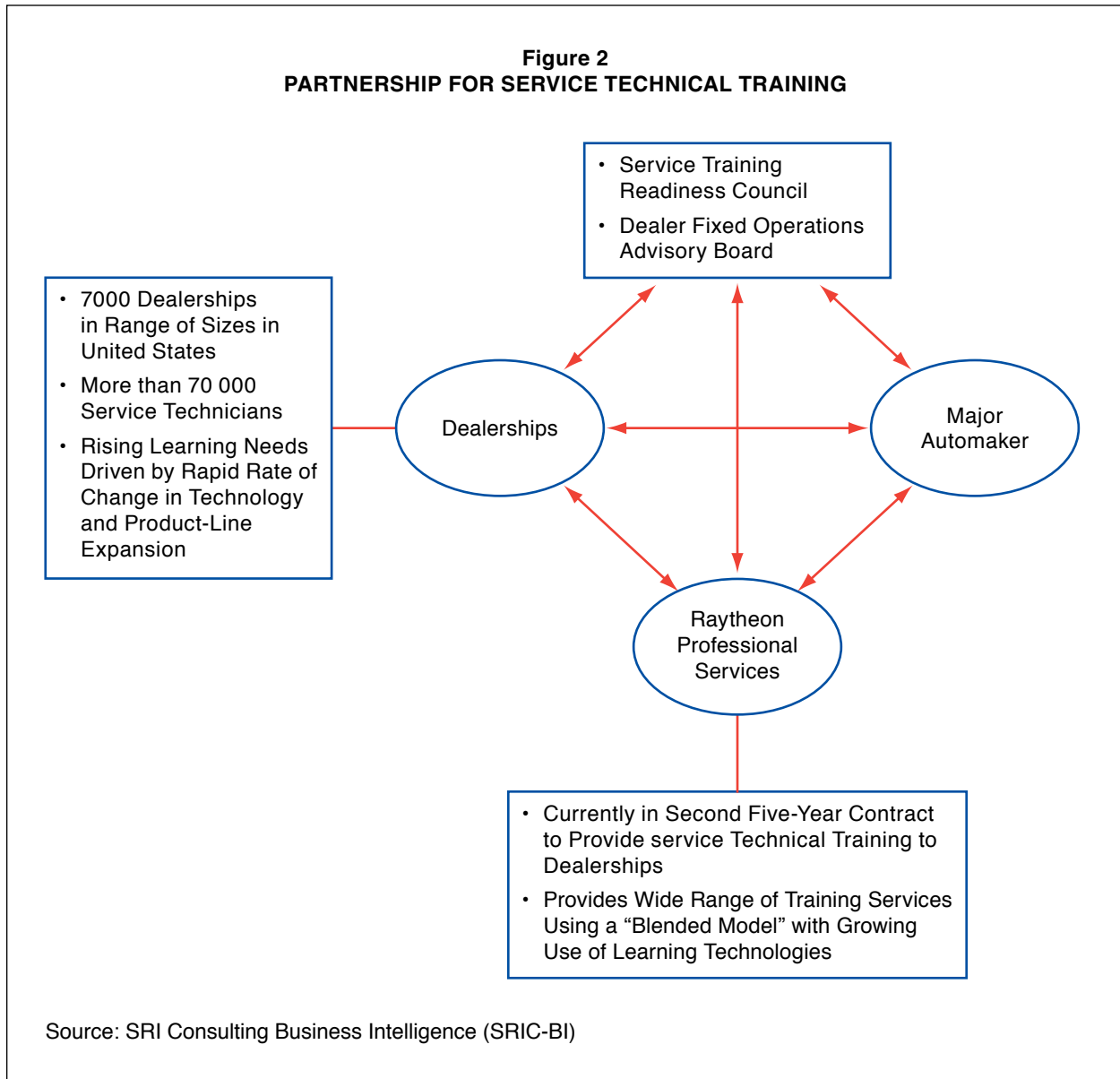
- *Fix-it-right-the-first-time rates.* If a customer's concern has no resolution during the initial service visit, obliging the customer to return a second time, the dealership must absorb the cost of the second repair. Thus fixing vehicles right the first time is crucial. This important principle affects both the cost of service delivery and customer satisfaction. Analysis revealed that the improvement in fix-it-right-the-first-time rates tracked closely with the increasing volume of completed training.
- *Reduced warranty expenditures.* A training intervention addressed a particularly troubling issue: that technicians frequently opted to replace a particular component rather than undertake a repair. Directly following the intervention, repair rates on that system increased markedly, and more costly swap-out rates declined.
- *Service technicians' retention and recruitment.* Not surprisingly, customer satisfaction levels and fix-it-right-the-first-time rates are higher at dealerships where technicians are experienced and have completed more training. According to Raytheon senior program manager John MacKenzie, a special study conducted jointly by the automaker and Raytheon confirmed a strong positive relationship between a dealer's support for technician training and the ability of that dealer to retain technicians and recruit new ones. This study helped to identify best practices, which the automaker is now sharing among the entire dealer body as a part of a toolkit.

Awareness is growing among dealers that their service technicians' active participation in training is an important element in their overall business success. Since the introduction of the STC, the automaker and Raytheon have jointly developed new recognition programs to stimulate participation in training, through an emphasis on Divisional Certification and Master Technician Certification. These programs honor those technicians who complete a defined sequence of training and earn appropriate certificates awarded by the U.S. National Institute for Automotive Service Excellence, an independent organization that recognizes professional technical competency through rigorous assessments.

Other initiatives address the goal of increasing recruitment of entry-level technicians. Raytheon plays an important part by managing the automaker's postsecondary technician-development program, available at 80 participating schools. The program enables talented students to earn associate degrees while preparing for rewarding careers as service technicians in the automaker's dealerships as they concurrently take advantage of paid internships.

## Collaborative Synergies

The relationship that has emerged between the automaker and Raytheon has resulted in a we-are-all-in-this-together attitude that has also brought an enthusiastic spirit of collaboration among all the stakeholders. This outcome has benefited Raytheon as it works closely with all parties (see Figure 2), giving it easier and quicker access to data and information necessary to plan better and execute the learning programs for service technicians.



The greater level of cooperation that now exists among the dealerships, the automaker, the Dealer Fixed Operations Advisory Board, and the Service Readiness Training Council has helped improve the quality of the delivered services and has resulted in faster achievement of goals stipulated by the various business metrics of the contract that Raytheon has with the automaker. By taking advantage of the greater flexibility in the location, timing, and methods of training delivery, both technicians and dealers have recognized an immediate and positive impact. Technicians are paid for completed work, and dealers don't see revenue coming in if technicians are not in the service bay. Both groups are therefore strongly in favor of training systems that reduce the time necessary or have flexible options in terms of content format or when and where the courses are on offer.

## Challenges and Future Direction

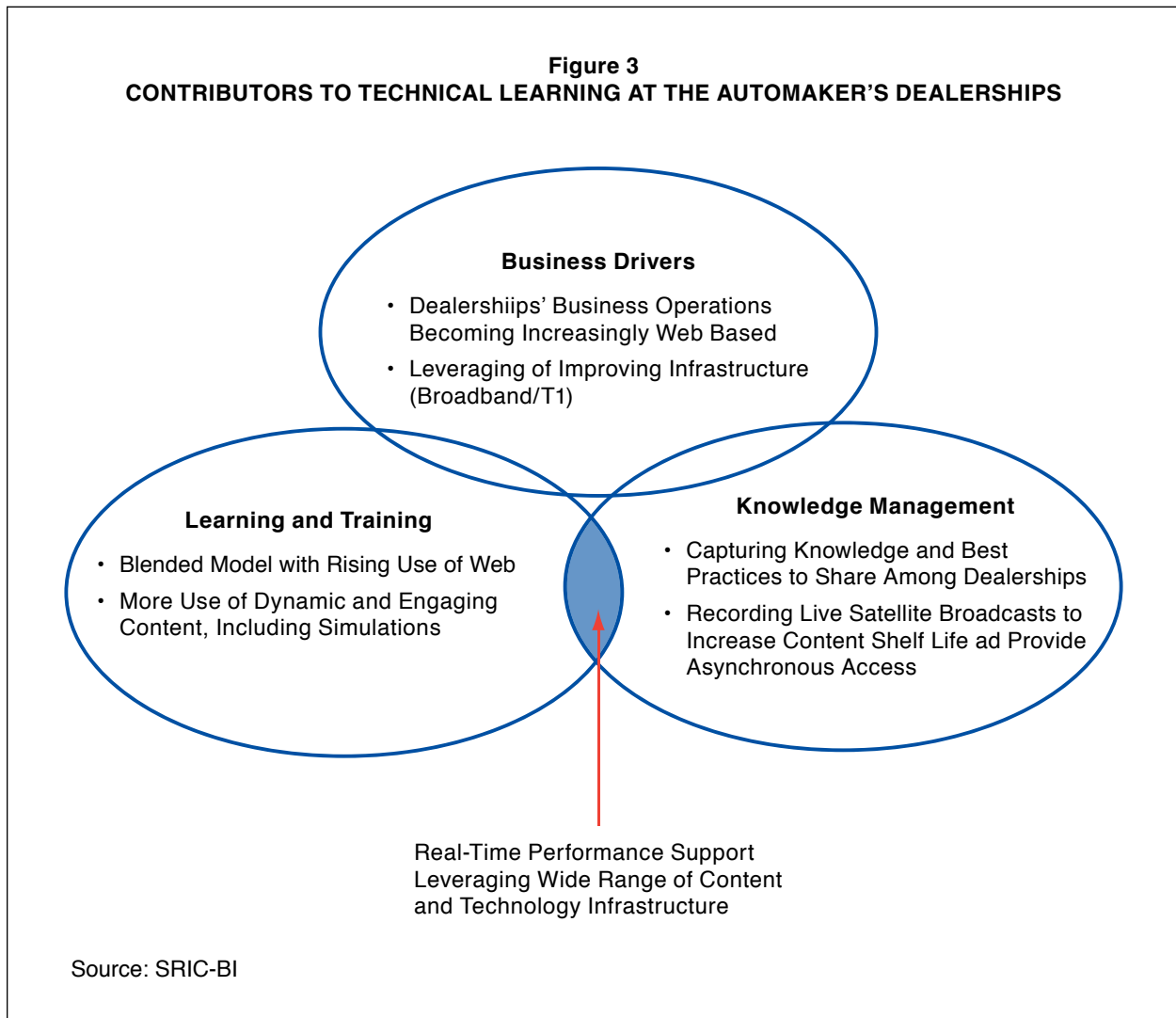
As the first five-year contract approached its end, Raytheon received a five-year extension, commencing in May 2004. Supplementary contracts now include technical-service training for the automaker's technicians in dealerships throughout Canada and Mexico and cover the vehicles of two additional product lines in the United States, as well. What's more, the training for STC has undergone repurposing for application to the automaker's fleet and commercial accounts and for people active with international distribution of North American-built products.

Raytheon believes that it secured renewal of this large and very important contract, and the expansion to new contracts, not solely as a result of its ability to deliver on the original goals and metrics, but also because Raytheon continues to be nimble, flexible, and customer focused. These skills will be even more important in the future as Raytheon addresses new challenges, such as:

- *Aligning learning with evolving business goals.* Raytheon must be alert to automotive-industry developments overall and the automaker's evolving business goals and ensure that the provided learning continues to align with the needs and expectations of the automaker and its retail-organization stakeholders.
- *Continuing to do more for less.* The automaker no doubt will continue to push its business partners and suppliers harder for more cost-effective products and services. John MacKenzie, Allan Blascak, and other Raytheon managers overseeing the contracts with this automaker recognize and expect this pressure; they strive to provide ever greater value by applying the concepts of the Raytheon Six Sigma process, which eliminates deficiencies and identifies innovative conceptual solutions to emerging issues.
- *Introducing innovative, efficient, and effective learning solutions.* A good outsourcing partner does not sit back and wait for the client to specify what changes to make. Instead, the outsourcing partner must constantly be watching for, and even anticipating, new needs; it must strive to deliver more efficient and effective training. Doing so requires improving the technology infrastructure as

well as enhancing the content or varying the delivery systems. Thus Raytheon continues to seek new solutions through offline experimentation, testing new and emerging technologies, and anticipating what is around the corner. The result should be higher-quality learning experiences, with higher levels of interactivity, than are available in many of today's online learning solutions.

- *Creating more integrated learning solutions.* To achieve maximum learning effectiveness, RPS must create or cost-effectively capture a wide range of learning content and knowledge and make it available to learners (through a combination of pull and push mechanisms). Doing so calls for integration of information that traditionally has been developed by separate and distinct disciplines and camps of knowledge management. The result will be greater volume and variety of learning content and the potential for greater reuse and repackaging of content for different learners and different purposes. (See Figure 3.)



- *Coping with varying interpretations of learning-technology standards and specifications.* Learning-technology standards and specifications often leave considerable room for interpretations. This lack of specificity can bring challenges for outsourcing companies and system integrators that have to make the standards and specifications work to the satisfaction of both learners and clients. (See *SCORM Implementation in eLearning.*)