

INTERACTIVE SESSION: TECHNOLOGY

DRIVING ARI FLEET MANAGEMENT WITH REAL-TIME ANALYTICS

Automotive Resources International®, better known as simply ARI®, is the world's largest privately-held company for vehicle fleet management services. ARI is headquartered in Mt. Laurel, New Jersey and has 2,500 employees and offices throughout North America, Europe, the UK, and Hong Kong. The company manages more than 1,000,000 vehicles in the U.S., Canada, Mexico, Puerto Rico and Europe.

Businesses that need vehicles for shipments (trucks, vans, cars, ships, and rail cars) may choose to manage their own fleet of vehicles or they may out-source fleet management to companies such as ARI which specialize in these services. ARI manages the entire life cycle and operation of a fleet of vehicles for its customers, from up-front specification and acquisition to resale, including financing, maintenance, fuel management, and risk management services such as driver safety training and accident management. ARI also maintains six call centers in North America that operate 24/7, 365 days a year to support customers' fleet operations by providing assistance regarding repairs, breakdowns, accident response, preventive maintenance, and other driver needs. These call centers handle about 3.5 million calls per year from customers, drivers, and suppliers who expect access to real-time actionable information.

Providing this information has become increasingly challenging. Operating a single large commercial vehicle fleet generates high volumes of complex data, such as data on fuel consumption, maintenance, licensing, and compliance. A fuel transaction, for example, requires data on state taxes paid, fuel grade, total sale, amount sold, and time and place of purchase. A simple brake job and preventive maintenance checkup generates dozens of records for each component that is serviced. Each part and service performed on a vehicle is tracked using American Trucking Association codes. ARI collects and analyzes over 14,000 pieces of data per vehicle. Then multiply the data by hundreds of fleets, some with up to 10,000 vehicles, all operating simultaneously throughout the globe, and you'll have an idea of the enormous volume of data ARI needs to manage, both for itself and for its customers.

ARI provided its customers with detailed information about their fleet operations, but the type of information it could deliver was very limited. For example, ARI could generate detailed reports on

line-item expenditures, vehicle purchases, maintenance records, and other operational information presented as simple spreadsheets, charts, or graphs, but it was not possible to analyze all the data to spot trends and make recommendations. ARI was able to analyze data customer by customer, but it was not able to aggregate data across its entire customer base. For instance, if ARI was managing a pharmaceutical company's vehicle fleet, its information systems could not benchmark that fleet's performance against others in the industry. That type of problem required too much manual work and time, and still didn't deliver the level of insight management thought was possible.

What's more, in order to create reports, ARI had to go through internal subject matter experts in various aspects of fleet operations, who were called "reporting power users." Every request for information was passed to these power users. A request for a report would take 5 days to fill. If the report was unsatisfactory, it would go back to the report writer to make changes. ARI's process for analyzing its data was extremely drawn out.

In mid-2011, ARI implemented SAP BusinessObjects Explorer to give customers the enhanced ability to access data and run their own reports. SAP BusinessObjects Explorer is a business intelligence tool that enables business users to view, sort and analyze business intelligence data. Users search through data sources using an iTunes-like interface. They do not have to create queries to search the data and results are shown with a chart that indicates the best information match. The graphical representation of results changes as the user asks further questions of the data.

In early 2012, ARI integrated SAP BusinessObjects Explorer with HANA, SAP's in-memory computing platform that is deployable as an on-premise appliance (hardware and software) or in the cloud. HANA is optimized for performing real-time analytics and handling very high volumes of operational and transactional data in real time. HANA's in-memory analytics queries data stored in random access memory (RAM) instead of on a hard disk or flash storage.

Things started happening quickly after that. When ARI's controller wanted an impact analysis of the company's top 10 customers, SAP HANA produced the result in 3 to 3 ½ seconds. In ARI's old systems

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environment, this task would have been assigned to a power user versed in using reporting tools, specifications would have to be drawn up and a program designed for that specific query, a process that would have taken about 36 hours.

Using HANA, ARI is now able to quickly mine its vast data resources and generate predictions based on the results. For example, the company can produce precise figures on what it costs to operate a fleet of a certain size over a particular route across specific industries during a certain type of weather and predict what the impact of changes in any of these variables. And it can do so nearly as easily as providing customers with a simple history of their expenditures on fuel. With such helpful information ARI provides more value to its customers.

HANA has also reduced the time required for each transaction handled by ARI's call centers—from the

time a call center staffer takes a call to retrieving and delivering the requested information—by 5 percent. Since call center staff account for 40 percent of ARI's direct overhead, that time reduction translates into major cost savings.

ARI plans to make some of these real-time reporting and analytic capabilities available on mobile devices, which will enable customers to instantly approve a variety of operational procedures, such as authorizing maintenance repairs. Customers will also be able to use the mobile tools for instant insight into their fleet operations, down to a level of detail such as a specific vehicle's tire history.

Sources: "Driving 2 Million Vehicles with SAP Data," www.sap.com, accessed February 1, 2014; www.arifleet.com, accessed February 1, 2014; and "ARI Fleet Management Drives Real-Time Analytics to Customers," SAP InsiderPROFILES, April 1, 2013.

CASE STUDY QUESTIONS

1. Why was data management so problematic at ARI?
2. Describe ARI's earlier capabilities for data analysis and reporting and their impact on the business.
3. Was SAP HANA a good solution for ARI? Why or why not?
4. Describe the changes in the business as a result of adopting HANA.

Leading commercial products for in-memory computing include SAP's High Performance Analytics Appliance (HANA) and Oracle Exalytics. Each provides a set of integrated software components, including in-memory database software and specialized analytics software, that run on hardware optimized for in-memory computing work.

Analytic Platforms

Commercial database vendors have developed specialized high-speed **analytic platforms** using both relational and non-relational technology that are optimized for analyzing large datasets. Analytic platforms such as IBM Netezza and Oracle Exadata feature preconfigured hardware-software systems that are specifically designed for query processing and analytics. For example, IBM Netezza features tightly integrated database, server, and storage components that handle complex analytic queries 10 to 100 times faster than traditional systems. Analytic platforms also include in-memory systems and NoSQL non-relational database management systems. Analytic platforms are now available as cloud services.

Figure 6.12 illustrates a contemporary business intelligence infrastructure using the technologies we have just described. Current and historical data are extracted from multiple operational systems along with Web data, machine-generated data, unstructured audio/visual data, and data from external sources that's been restructured and reorganized for reporting and analysis. Hadoop clusters pre-process big data for use in the data warehouse, data marts, or an