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# ORACLE<sup>®</sup>

ORACLE CORPORATION

NEWS AND FEATURES

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# Going Mobile

**ORACLE helps  
Canada's cellular phone network  
shift into high gear**

**C**ELLULAR telecommunications is a relatively new phenomenon in Canada. Licensed for public use only two years ago, it conveniently satisfies communications cravings, whether hurrying along a highway or visiting a remote village in the Northwest Territories.

Creating a viable cellular telephone system for Canada has, however, presented developers with unique challenges. The relatively small and widely dispersed population has made methods successful in the United States and Japan simply unsuitable for Canadian use. Moreover, to ensure a niche in this new market, Canadian-based cellular companies have also had to develop terminals and systems which match the quality and reliability of well-established international competitors.

To date, only one company has met these challenges successfully. Four years after opening its doors, Alberta-based NovAtel Communications Ltd. remains Canada's only manufacturer of cellular telephones and systems. Focusing on the small-urban area and rural market, the firm expects to sell 16 cellular systems worldwide in 1987, triple the number sold the previous year.

While its success has been based on a number of important factors, one "calculated development risk"—the use of a relational database management system (RDBMS)—has helped push the company into the forefront of the international cellular market. ►



# Going Mobile

"In our opinion, RDBMS technology was a definite risk at the time we chose it," notes David Crowe, NovAtel's manager of cellular systems software development. "People were saying that while RDBMSs were nice in theory, they probably wouldn't fly.

"We saw an RDBMS as something that could provide us with fast software development," Crowe continues. "As a new company, we were starting from scratch and wanted to get our product out as quickly as possible. A traditional, non-relational database, or the standard operating system files used in other cellular systems, could not easily meet the speed, flexibility, or ease we required. An RDBMS could. We took a big risk and gave it a try. Luckily, the decision has paid off."

Located in the Master Mobile Centre (MMC), one of three main components in NovAtel's cellular network, an ORACLE database is responsible for the operation, administration, and maintenance of the entire system. Its stored data includes a list of system subscribers and the cellular features available to them, such as call forwarding; a list of mobile users not allowed access to the system; and detailed information on how to handle each call made on or through the system, including direct-dial long distance calls that require connection to the public telephone network.

The ORACLE information is downloaded into a series of PDP-11-based Satellite Mobile Centres, which are used to control the actual call processing, and then to individual cell sites, which complete the physical requirements of the call.

Running on a MicroVAX II computer, the NovAtel database has grown to 40 megabytes during its three years of operation. According

to Crowe, that size will increase as the system becomes more fully developed.

"The ORACLE RDBMS is particularly effective for our application, given the complexity of the data modeling involved. Keeping track of the types and numbers of parts required to run the cellular system efficiently is difficult," Crowe admits. In his view, using a non-relational system to perform those tasks would be both primitive and time-consuming.

"Our biggest challenge is that we are designing a real-time system," Crowe explains. "In a non-telecommunications application, changes would just be stored in the database. But in our case changes are not only stored but also automatically routed to other parts of the system. ORACLE gives us the flexibility and reliability we need to do that."

Crowe notes that ORACLE's ability to distribute information helps solve problems, both real and potential, within the system. "That becomes important when we have difficulties with noisy or otherwise faulty facilities requiring service," he says. "The database makes sure that the appropriate equipment and personnel get the information required to rectify a problem. At the same time, it helps us work around any problems by rerouting calls." All these tasks, Crowe points out, are transparent to users.

ORACLE's distributed capabilities also offer an added telecommunications advantage. With their focus on small-urban and rural markets, NovAtel's cellular systems work at many different sites, often great distances apart. The ability to relay information between those sites without the use of expensive telephone land-lines is of utmost importance. ORACLE handles that exchange with ease.

User-friendly interfaces provided by the ORACLE RDBMS have also proven popular with NovAtel's customers. "While the actual database is transparent to the telephone operating companies, they do have some interaction with it when entering subscriber data, such as new features or numbers," Crowe explains. "The vast majority of the feedback we get from customers says that this is the friendliest interface they've seen. Obviously, that's good—since our success is based on meeting customers' needs."

As NovAtel's use of an RDBMS has grown, so too has it evolved. "At first, we generated tables on an ad hoc basis, designing a portion of the system, then generating the tables needed," Crowe notes. "But it soon became obvious that some kind of data modeling was required."

While future enhancements are likely, Crowe says NovAtel is pleased with the current status of its database applications. "Right now we have a good system, based on ORACLE and its development tools. In the future we will probably want to enhance that even further by adding things that customers request," he says. "At the moment, it is simply a matter of keeping pace with what the market demands. Using ORACLE, we have the capability to do that." □



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