IBM crosses the Olympic finish line
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IBM crosses the Olympic finish line

By Rob Guth and Lynda Radosevich

Jack Overacre isn't a hockey fan. But when the Italian and Kazakhstani men's hockey teams faced off at Nagano, Japan, on Feb. 7, in the first competition of the 18th Olympic Winter games, the IBM director's eyes were glued to the television.

That's because the game was the first Olympic test of an information system that under Overacre's management cost IBM untold millions of dollars and took hundreds of its people 14 months to build and test.

At stake is IBM's reputation, soiled at the 1996 summer games in Atlanta, when IBM's system, along with other problems, spit out inaccurate and garbled information to the press leaving Big Blue with a public relations nightmare.

"When you do a moon shot the world's watching. When you do the Olympics the world is watching," Overacre says, who has been shuttling back and forth between Nagano and Raleigh, N.C., for more than one year. "You do all this prep work and until that rocket goes up in the air you really don't know [how well it will work]."

Was he worried beforehand?

"I'd be lying if I told you I wasn't," Overacre admits.

Most companies will never assemble a distributed system that is as enormous and complex as the Olympic Games. But any IT manager can learn from IBM's project management experience, which is largely successful but seasoned with knowledge gained from failures over its 38-year association with the Olympics. (See sidebar, below.)

If IBM left Atlanta with one lesson, it's that the success of an information system boils down to a single question: Does the system meet users' expectations?

IBM leans on project management, rapid deployment, and heavy testing

Officials now acknowledge that many shortcomings of the Atlanta system were the fault of project management. Some of the systems were not adequately tested until after the 1996 Olympic torch was lit. The Info '96 intranet, for one, was still being tested during the games so IBM could not run data for some events through the entire system until competition time, IBM officials say.

"In certain cases, the real data was the test data," admits one IBM official involved in the Atlanta project who asked not to be named.

To avoid such gaffes, Overacre's project plan for Nagano addressed several key areas: use proven technology, test the full system early, and foster tight communication with the system's "users" — Olympic committees, sports federations, press organizations, and broadcasters — to close any gap between what users want and what the system can deliver.

Sometimes, IBM had to lower expectations. What the federations wanted vs. what IBM could deliver in the given time frame was too high. So for every sport, IBM and the federations conducted an expectations gap analysis. They examined results systems for every sport, comparing what the federations requested with what was delivered — specification by specification — and negotiated the differences.

"Most gaps had to do with report generations, the format of reports headings, names, and so on," Overacre says. The federations run their own world championships events and have their own formats. But when they get to the Olympics, they have to conform to Olympic formats, which does not always please federation officials.

THE SETUP. IBM's Nagano system will handle nearly all of the data at the games including athlete accreditation, press feeds, results, and commentator backup. The system will have as many as 70,000 users in Nagano and as many as 100 million hits per day are expected on its Web site. At the core of the system are two S/390 Parallel Sysplex mainframes, more than 100 R/S 6000s, and 4,000 PCs and PC servers.

Although much smaller than Atlanta's, the Nagano Olympics posed many of the same challenges. First is the immutable deadline: the games started Feb. 7. Even if the system crashed, "we can't say 'Gee, can we move it back a couple of days?'," Overacre says.

In addition, the system's builders and users have diverse cultural backgrounds making communication and understanding difficult. For example, Overacre's team is drawn from Canada, France, Norway,

HANK OSUNA

AN OLYMPIC TECHNOLOGY RETROSPECTIVE

IBM has run Olympic Games IT systems since 1960, back when many of today's IT leaders were pedaling dirt bikes and well before many of their staffs wetted their first diapers. A look at the technological highlights of each Olympics gives a good overview of the course of progress in the IT industry overall.

Milestones include the following events.

- **1960, Squaw Valley, Calif. A fascinated public watches as CBS commentator Walter Cronkite reports live from the IBM data computer center that this is the first time any sporting event uses computers to accurately record tabulations. The system comprises an IBM RAMAC 305 computer and punch card data collection. It reportedly cost $500,000.**
- **1964, Innsbruck, Austria. IBM online terminals are used to collect data, feeding into IBM 1401 and 1410 computers.**
- **1976, Montreal. IBM introduces a series of games management applications running on S/370 Model 135 mainframes.**
- **1984, Sarajevo and Los Angeles. E-mail and PCs make their debut. IBM 4381 systems run central operations.**
- **1992, Barcelona, Spain. Interactive touch screen radio and television commentator system is introduced. IBM 3090 and ES/9000 mainframes provide computing muscle, and AS/400 is introduced to run the Olympic Committee's office systems.**
- **1994, Lillehammer, Norway. RS/6000 Unix systems are used in venue design.**
- **1996, Atlanta. First official Olympic Games home page is introduced on the Web. The site receives 200 million hits during the Games.**

— Lynda Radosevich

Poland, Australia, Japan, and the United States. (See sidebar, below.)

"It's not just CPUs, screens, and megabits per second," says Toshi Shibata, general manager of IBM's Olympic Project Office in Nagano, Japan. "It's people hand in hand orchestrating the entire games."

And demands on IBM are only getting harder, Shibata notes. For example, when reigning U.S. champion Michelle Kwan finishes her routine in Nagano, it is a comparatively simple task for the IBM system to process the judges' scores of her performance. But at the behest of broadcasters who have television viewers in mind, IBM must manually synchronize the results display with the replays of Kwan's routine, shots of her waiting in anticipation of the judgment, and the reaction of the crowd as the judges raise each of their scores for Kwan.

"The fastest way is not necessarily the thing to do," Shibata says. "We really have to orchestrate the IT system, the TV, and the environment so that we can make the event attractive."

A results system receives timing and scoring information from each of the venues, processes the information based on the rules of each sport discipline, and then prints the results for distribution to the press and games' officials. The results are also delivered to the games' Web site and Info '98, an intranet for athletes, press, and officials.

Embedded in the results system is the Commentator Information System (CIS), which through a touch-screen monitor enables broadcasters to view background, such as athlete biographies and medal counts, in addition to real-time results. Underlying the CIS is IBM's PC Server 330 running OS/2 Warp Server and the company's MQSeries message-oriented middleware.

RISK AVERSE. The technology changes made since Atlanta were focused on the Internet and Info '98, according to IBM officials. IBM scrapped Info '96, an AS/400-based system that ran IBM's Systems Network Architecture protocol suite, and in Nagano opted for a TCP/IP network running on RS/6000 SP servers and IBM's AIX Unix OS.

Info '98 pages are written in HTML and the system's clients use a modified version of Netscape Communications' Navigator browser. In Atlanta, IBM developed its own Web browser and used its own VisualAge development tool set.

Although a few new technologies — including certain caching software and dynamic load-balancing software — are tucked away in the Nagano system, IBM limited its risk by sticking with stable and mature technology, company officials say. That wasn't always the case in Atlanta, especially for the Web site, which necessitated using new technology because the Web as a live publishing medium was so new.

"The Atlanta Olympic site was held together with Scotch tape," says Irving Wiadawsky-Berger, IBM's Internet division general manager, in Somers, N. Y., who was in charge of the Atlanta Web site.

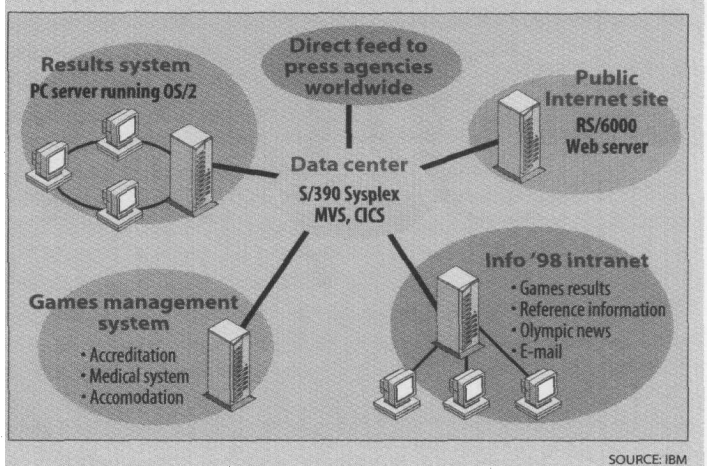
"This time we're using technology that is state-of-the-art, but stable, and it is held together with bands of steel," Overacre says. "Leading-edge technology brings new features, but inherent risk."

To coordinate the entire project, IBM created an end-to-end plan, more than one year ago, using project management software. The plan has about 1,500 line items covering 10 major projects. Each subplan has detailed plans. The program simulates the ripple-through effect when one piece falls behind, thereby helping IBM adjust.

With most of the system in place by late 1996, IBM spent the past year testing it by fielding hundreds of requests for changes from sports federations and press organizations. With the Atlanta system, sometimes such change requests were not handled with the whole system in mind. A programmer, for instance, might receive a request from a federation to change "Ladies" to "Women" for a certain sport, obligingly rewriting a few lines of code only to wreak havoc on other parts of the system.

IBM Olympic team

Rather than debuting leading edge technology at the Games, IBM has gone with a tried-and-true mainframe, Unix, and PC hardware, as well as Web technology through Domino, OS/2, and Netscape browsers.



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On the Nagano project, IBM actively used "change management boards" that tapped as many as 10 representatives from across the project to review all potential changes. The boards would assess the impact the changes would make on the entire system and decide whether the change was warranted.

For example, prior to an early system trial, the International Olympic Committee (IOC) asked for a seemingly simple alteration: change the results system abbreviation for snow board from "SD" to "SB."

After a month of discussions, the change board discovered that in addition to other problems, some applications' pages had bit-mapped images that programmers would dig through, manually find every "SD" and change it. The hundreds of person-hours along with the regression testing required to make the change might have hobbled other, more critical, parts of the system's development, Shibata says.

"It was just a trivial designation but we were lucky we discussed it and communicated to the IOC that it would be very risky to make," Shibata says. Eventually, the board discovered that Olympic softball uses the "SB" designation and the request was dropped.

PRACTICE RUNS. Learning from the mishaps of Atlanta, IBM took testing very seriously in Nagano.

"We were able to do a lot more testing this time, and we learned, too, how to test better and what to test," Overacre says. For instance, IBM tested systems for each sport, coordinating with the timing companies and sports federations. "You can test in shadow mode, but you don't get the complexity you get when you add the federations and other customers."

For instance, each event relies on people taking printed results and running them to the media and judges. IBM assumed that qualifications for the job were pretty simple. But when testing the ski slope systems, they found that the only way "runners" could get results delivered in time was to ski down the hills, which considerably changed the job requirements.

"You find different challenges when [you] test in real situations," Overacre says. "More testing costs more money up front, maybe. But in the long run, it costs you less."

For the Sydney Games in 2000, IBM will test more and begin testing even earlier.

Coming down to the wire — some IBM employees even collapsed from overwork — IBM went for a rapid deployment strategy of installing standardized hardware preloaded with software. However, the company has also found that it needed to be flexible to deal with the physical surroundings.

In Atlanta, IBM had only 48 hours to install PCs in some of the public venues whereas it had better access to venues in Nagano, and installed about 3,000 workstations and ThinkPad notebooks in most of the venues by December. But although the systems were pre-configured and ready to go, IBM held off until January before deploying workstations on ski venues when officials learned that the ski houses would not be heated over the holidays. IBM also learned that the houses would not be heated at night during the competition, so it will have technicians wrap the workstations in electric blankets at night.

"We're concerned with the affect of the temperature swings, especially on disk drives," Overacre says.

Whether the IBM Olympic team is successful or not, the cost of such attention took its toll on the company. Last month, IBM forecast that its earnings per share for the first quarter of this year will be down as much as 15 cents, in part due to extraordinary expenses associated with the Nagano games.

"We can't have two Olympics in succession in total failure," says Chiharu Igaya, executive board member of the IOC, "so I think IBM is really putting its soul into it this time."

Rob Guth is the Tokyo correspondent for the IDG News Service, an InfoWorld *affiliate. Senior Editor Lynda Radosevich will cover technology at the Olympic Games from Nagano, Japan.*

IBM JUMPS OVER CULTURAL HURDLES

Although a popular ad campaign talks of IBM's "Solutions for a Small Planet," the company's Nagano experience demonstrates that even the world's largest computer vendor is still learning how big the planet truly is.

First there is the language problem. With 80 countries participating in the Nagano Games along with 600 IBM workers and some 1,300 volunteers, the Nagano Olympics presents IBM with a huge communication challenge if the system has a problem. As a safeguard, IBM will have staff at each venue that not only understand the technology and sports discipline but can speak the language of the judges.

"One of the things that we learned from Atlanta was the need to have those kinds of language skills because at times there was some confusion," says Jack Overacre, director of Olympic Technology Operations at IBM. "Communication is the key when you are doing a global solution. That's one thing we keep working on."

Then there is Japan's love for paper. All requests for changes to the Nagano system were written and distributed on paper, instead of on the Notes messaging platform from IBM's subsidiary Lotus Development. Rooted in the Japanese penchant for paper records — often derided as a huge source of white-collar inefficiency here — the scheme actually proved a simple way for IBM to reach staff who were often on the go, according to Toshi Shibata, general manager of IBM's Olympic Project Office.

"[Lotus] Notes is good if you're sitting at a desk ... but paper is sometimes efficient because it can interrupt a meeting," Shibata said. "I still value the use of paper."

Lastly, there is the Web site oversight. Just weeks before the Games began, IBM learned that pro-Pyongyang, North Korea, groups in Japan took offense at a reference to the Korean War written on the Nagano Olympic Organizing Committee's Web site. In the site's country descriptions North Korea was depicted as having invaded South Korea in 1950. North Korea views the Southern part of the Korean peninsula as the aggressor in the three-year Korean War.

The committee suddenly yanked the reference, along with all country descriptions and soon issued an apology. The material had been licensed by IBM from the World Book Encyclopedia.

"Things that are perceived not offensive to a large population are offensive to someone ... When you get into these things you never think about it. It never crossed my mind," said IBM's Overacre. Next time, "we're going to do a ton of research first vs. just do it and find out the hard way."

— Rob Guth