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Sports fans' tech thirst drains local stadiums

Teams work to meet demand for data

By Bill Shea



Can't upload a photo of your ballpark hot dog during a game because you have no service on your smartphone?

You're not alone.

Spotty or nonexistent cellular and Wi-Fi connectivity at stadiums is a major fan complaint in Detroit and across professional and college sports, where massive crowds calling, tweeting, texting and Instagramming inside dense concrete and steel venues have strained mid-2000s technology that's unable to meet demand.

Wireless carriers and Detroit's four pro sports teams are bolstering technology at the four stadiums to improve the ability of fans to use their phones and tablets during games -- which in turn makes it easier for the franchises to offer in-game perks such as concessions and instant replays via fans' mobile devices.

The **Detroit Pistons** added new Verizon Wireless technology to **The Palace of Auburn Hills** before the current season, and Verizon installed new technology at **Ford Field** in December to offer free wireless access and improved connectivity for its customers during **Detroit Lions** games.

The **Detroit Red Wings**, who have a deal with AT&T at Joe Louis Arena, are seeking better connectivity while planning for a new arena.

The **Detroit Tigers** don't have public Wi-Fi at Comerica Park, and are in talks with providers for connectivity upgrades, the team said.

Too much action

Why fans have problems with their mobile devices at games and concerts is simple: The buildings

PHONE NUMBERS

U.S. wireless subscribers by carrier in 2012:

- Verizon: 111.3 million
- AT&T: 105.2 million
- Sprint: 56 million
- T-Mobile: 33.2 million
- TracFone Wireless: 21.3 million
- MetroPCS: 9.3 million
- Cricket Wireless: 5.9 million
- U.S. Cellular: 5.8 million

Source: Crain's research

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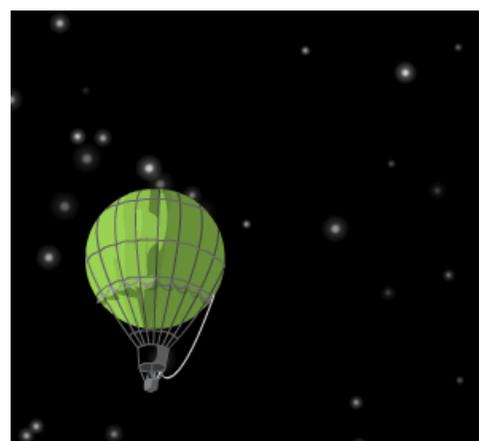
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are usually not conducive to easily transmitting data signals, and the older technology's capacity cannot handle large crowds in small places.

Making it worse: People are increasing uploading photos and videos during events, further consuming bandwidth.



Todd

That's because of the number of apps running on the device. The typical smartphone has the equivalent drain, on average, of 10 ongoing cellphone calls on a stadium's system, said Rob Todd, founder of Houston-based **Molitoris Group**, which handles cellular and Wi-Fi installation projects for entertainment venues.

"Each antenna can only handle a certain amount of phone calls. Once that quotient is reached, you cannot make a phone call," he said.

Usage and demand is only going to grow, which has spurred teams and carriers to take action.

San Francisco-based network technology giant **Cisco Systems Inc.** last spring estimated that global mobile traffic will increase eighteenfold in the next four years, and Internet-connected mobile devices by then will exceed the number of people on the planet, *Sports Business Journal* reported last spring.

People expect to be able to use a mobile device almost anywhere, putting pressure on carriers and teams to enhance service.

"Now you look at it as an expectation of fans. It's in planes and airports. They expect to be connected wherever they are," said Priya Narasimhan, founder and CEO of Pittsburgh-based **YinzCam**, a developer of live in-venue mobile apps for sports teams, including the Lions and Red Wings.

YinzCam has seen its 36-team client base begin to bolster its venue cellular and Wi-Fi connectivity capacity with new technology, especially distributed antenna systems, or DAS, Narasimhan said.

Local improvements

Todd's Molitoris Group handled the cellular and Wi-Fi upgrade last year for the Palace and is negotiating with mobile carriers for a new system for Joe Louis Arena.

In addition to sports venues, his firm does systems for hospitals, convention centers and hotels -- all places with lots of people and plenty of Wi-Fi and cellular use.

Todd's firm is hired by a team or venue to map out and engineer a cellular or Wi-Fi system, or both, and then engage mobile carriers for the best deal. Molitoris then helps monitor terms of the contract, he said.

The carriers typically pay for the equipment and installation at the venue, and they then pay the team or arena a rental fee. Other cell service providers pay a fee to the initial carrier to piggyback, he said.

"At the end of the day, the venues see this as the carrier's problem. They sign the users up and have to provide the service," Todd said.

That's how the deal worked at the Palace, he said.

The Palace had an older 2G system in place that couldn't handle current data usage, he said, and most phones today require 3G and 4G networks to work.

Todd estimated that initial infrastructure cost for a cellular installation at \$2 million to \$2.5 million, and another \$250,000 for each additional carrier to join.

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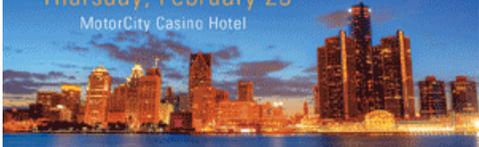
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It takes about three months to install a system, he added.

"They reason they're in vogue right now with the carriers is that the carriers want to put in infrastructure that serves the most people, and most stadiums are very interested in building out their wireless coverage," he said.

The local stadiums use DAS, which in sports arenas typically are a network of hundreds of small nodes installed throughout the venue to emit short-range Wi-Fi signals originating from a main server.

DAS is considered the cutting-edge technology, but it's not perfect. Not everyone is going to get optimum service, and mobile device technology evolves rapidly.

"You've not going to be able to capture everyone. It would be cost prohibitive," Todd said. "No system is perfect, but these systems get you close to perfection."

The Lions faced the most complex hurdle because they have the largest venue and largest crowds.

More than 400 antennas, new servers and other infrastructure were installed at the 65,000-seat stadium between August and December, said Mark Emerick, Verizon director of network operations in Michigan.

"The (Wi-Fi) system can handle tens of thousands of users," he said.

The free public Wi-Fi service for Verizon Wireless customers went live for the Lions' Dec. 22 game against the **Atlanta Falcons**.

Verizon didn't disclose the upgrade cost, but it's believed to have been within the industry average of between \$2 million and \$3 million.

Verizon's cellular network at Ford Field saw its capacity tripled prior to Super Bowl XL in February 2006, he said.

"The 3G and 4G within the stadium are very robust," Emerick said. "Wi-Fi was an opportunity to provide another service offering."

The new high-density Wi-Fi system supplements the cell sites that provide wireless coverage in and around the stadium, Verizon said. The upgrades included approximately 10 miles of blown fiber-optic cable and 15 miles of copper cabling, the carrier said.

The new system bolsters Ford Field's DAS network put in place in 2006 but which was strained by the explosion of wireless mobile devices and customer usage since then.

"Within the last four years, we've seen a tremendous growth rate," Emerick said. That's because usage rates at least double year over year -- and because apps are "data hungry."

That appetite is both for consuming and creating data.

The network setup for the 68,658 fans at Super Bowl XLVI in February in Indianapolis' Lucas Oil Stadium saw a total of 225 gigabytes of data downloaded and 145GB uploaded, and at its peak the network supported 8,260 simultaneous connections, according to tech journal [ArsTechnica.com](http://www.ars Technica.com).

Mobile wireless access trucks were brought in for the game to increase load capacity.

Problem at the Joe

Joe Louis Arena presents an unusual problem.

"We have a partnership with AT&T that includes the installation of a repeater inside Joe Louis Arena



that provides a very strong cell service. However, Joe Louis Arena is not equipped with the infrastructure required for dedicated, publicly accessible Wi-Fi service," John Hahn, the Wings' senior director of communications, said via email.

Joe Louis has technology for 2G devices, Todd said, which means fans have almost no Internet access during events.

Because the Red Wings intend to move, there's concern from mobile providers about investing much into an arena that will lose its primary tenant and could be razed.

The Ilitch family has floated the idea of a \$650 million residential, commercial, office and entertainment district to be anchored by a new multi-use hockey arena somewhere downtown.

That venue will require its own Wi-Fi system, Todd said. Anything installed now at Joe Louis couldn't be transported to a new arena, he said, and it likely would be out of date anyway.

"In the past three years, this technology has gone to 4G," he said. "It mutates every six months in some way. The carriers have to keep up with it to keep up with other carriers."

Todd also noted that the wave of improved cell and Wi-Fi technology in the Detroit market has benefits beyond games and concerts.

"There are huge implications to it," he said. "It's not just a matter of creating a fan experience; it also puts Detroit on the map for people who want to bring conventions to town. They want the best wired venues."

"There is no site in the world that has better technology. This is a way for Detroit to stay ahead of the curve."

Bill Shea: (313) 446-1626, bshea@crain.com. Twitter: @bill_shea19

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