

## Efficient new wireless system can save 10 percent of bandwidth

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Driven by fast-growing use of smart phones and Internet videos, wireless communication among Americans is expanding so rapidly that a tsunami of megabytes could soon threaten to overwhelm the bandwidth available.

The <u>Federal Communications Commission</u> (FCC) has already auctioned off huge chunks of <u>bandwidth</u> to wireless firms, but more is needed to fill what the FCC calls a "spectrum gap."

Now a Syracuse University scientist has invented a new technology for handling wireless traffic that significantly reduces bandwidth use. The impact on wireless companies could be a dramatic gain of up to10 percent in bandwidth, enabling them to support many more subscribers with the same amount of bandwidth.

Baio Chen's invention makes a major reduction in "training overhead," which occupies a significant portion of the wireless band. Most current systems typically allow 15-20 percent of bandwidth for this "overhead," and the new technology potentially reduces it by half.

Bandwidth is very valuable. When the FCC auctioned off a large portion of wireless bandwidth last fall, the <u>wireless carriers</u> who bid successfully paid a total of \$19.6 billion. For large wireless firms, saving even a fraction of their investment in bandwidth could mean millions of dollars.

There are also benefits in the new technology for the cell phone user.



"If you are sending an image from your cell phone," says Chen. "You typically get an on-screen bar that grows as it repeats the word 'sending, sending.' "With the new system the bar will fade sooner. The user gets the job done more quickly, and that will extend the phone's <u>battery life</u>."

Chen, of the Department of Electrical Engineering and Computer Science in SU's L.C. Smith College of Engineering Computer Science, received a patent on the invention in April 2009. The new technology could be put to work with little added research.

Provided by Syracuse University

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