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### **Quantum Signal Biometrics Experiment: Diversity is key!**

(ANN ARBOR, MI) -- Above a party store in downtown Ann Arbor, two data collection experts quietly conducted a high-tech data collection experiment for more than a year. The experiment, run by a local engineering company, is designed to build a substantial database of human face and voices to support the development of new and improved biometrics algorithms. And diversity played an important role in the experiment!

Biometrics - the measurement of physical or behavioral characteristics to verify human identity - is being considered as a security tool in both the public and private sectors. The field covers a wide range of authentication technologies: from fingerprint recognition to voice authentication to identification through keyboard typing technique.

The experiment, conducted by Quantum Signal LLC, was part of a \$1.83 million, 3 year grant from the National Institute of Standards and Technology's Advanced Technology Program (NIST ATP). The focus of this project is to develop and test novel math-based biometric algorithms using both speech recordings and images of the face. If successful, the developed technology will result in 95+% accurate biometric authentications and significantly increase the state of the art.

The work being conducted is important because current biometrics technologies cannot overcome variation and "noise" common in real world situations. Variations that pose difficulties include those inherent in an individual (e.g., beards or eyeglasses), and those due to aspects of data collection (e.g., facial camera angles, lighting and poor cell phone operation). These variations can cause accuracy of conventional systems to drop to 50% or less.

Quantum's experimental facility, housed in an office building adjacent to the University of Michigan's central campus, was used to gather a database from several hundred diverse subjects that incorporates such variation. Face photos were taken under different lighting angles, facial angles, and expressions. Simultaneously, voice recordings were made using both a high quality microphone and an ordinary telephone. Subjects participated in four experimental sessions over the course of several months. The experiment was completed in 2004, and now the data has been incorporated into the Quantum Signal Biometrics Database (QSDB). QSDB is being used by Quantum Signal and others to refine their newly developed biometrics algorithms.

A key feature of QSDB is the diversity of the subjects. By capturing a large cross section of geographical, national, and ethnic diversity, researchers are able to develop biometrics technology that accommodates variation seen in the US population today. Without such database diversity, systems may have significant difficulty. The QSDB is being licensed to other companies throughout the US so they can take advantage of the data as well.

Interviews and press graphics are available by contacting Quantum at (734) 429 - 9100.

### About NIST

NIST is a non-regulatory federal agency within the U.S. Commerce Department's Technology Administration. The Advanced Technology Program (ATP) bridges the gap between the research lab and the market place, stimulating prosperity through innovation. Through partnerships with the private sector, ATPs early stage investment is accelerating the development of innovative technologies that promise significant commercial payoffs and widespread benefits for the nation. As part of the highly regarded National Institute of Standards and Technology, the ATP is changing the way industry approaches R&D, providing a mechanism for industry to extend its technological reach and push out the envelope of what can be attempted. The ATP awards are highly competitive. Since 1990, 4,696 proposals were submitted and only 581 projects were awarded nationally.

### About Quantum Signal

Founded in 1999, Quantum Signal LLC is an engineering technology company specializing in advanced signal and image processing for homeland defense, security, and automotive engineering. As a leader in this dynamic field, the Ann Arbor-based firm is transitioning exciting signal processing technologies out of the ivory tower and into a wide variety of commercial applications. For additional information on Quantum Signal, please visit our Web site at [www.quantumsignal.com](http://www.quantumsignal.com) or call (734) 429 - 9100.