

Alfred University alumnus named "Top 40 Innovator" in utility industry worldwide

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John Simmins, who earned his bachelor's degree in ceramic science from Alfred University in 1984 and his Ph.D. in 1990, was named one of the "Top Forty Innovators" for 2017 in the utility industry worldwide by [Public Utilities Fortnightly](#) for leading efforts to apply augmented reality to improve utility operations.

In short, Simmins and his team were cited for combining augmented reality tools with conventional methods of estimating storm damage that caused power outages in a way that can save millions of dollars of downtime for the utilities, and more importantly, their customers.

As Simmins explains, "Pencil and paper continue to be the medium by which many utilities capture storm damage. It is a time-consuming process of writing the information down, physically transporting it to an office, and entering the information into a database. Only then can resources be mustered to repair the damage and get the lights back on.

"The technicians assessing the asset(s) conditions in the field may not have sufficient training and they may not know what notes to take or may leave out key information. Mistakes happen and mistakes mean more time is consumed when the information is written wrong or read wrong when it is entered. These mistakes could result in the wrong work being performed or even a worker driving to the wrong location. Another possibility is that they show up the right location but with the wrong equipment. This situation unnecessarily increases the cost of labor and operations and is a detriment to metrics such as SADI (System Average Interruption Duration Index).

"Through a proof of concept project, EPRI (Electric Power Research Institute, an association of power utilities Power Utilities Fortnightly says "is almost synonymous for innovation) endeavored to evaluate if augmented reality (AR) could in fact redefine the damage assessment process. The emerging AR technology had the potential to create a revolutionary change in how data is collected, transmitted, and stored during storm assessment. The proof of concept project replaced the medium of paper and pencil observe and capture the harm on assets inflicted by storms. In this proof of concept, several technologies were utilized to accomplish a user experience to assess a storm damage re-creation scenario. The technologies required are accurate GIS location data, accurate identification of damaged assets, technology to describe the type of damage in a standardized way, hands-free data recording of the damage through the use of an AR headset, and wireless transmission of data, pictures, or video to the warehouse and work crews to place the right assets at the right time at the right place to maximize the ability of the line worker in restoring the power.

"The project test at Duke Energy consisted of using field workers, some of whom were trained in storm damage assessment and others that were not. The test subjects were given a helmet-mounted heads-up display (HUD) consisting of a monocular screen. On this screen, images of the undamaged assets appeared as a comparison with reality. These 'before' images were needed for the assessor to properly determine if there was any damage to utility pole and pole mounted assets. Each pole has a corresponding number which is linked to said images and are related to GPS positional data. The means of control was through voice command capability in the HUD to select preset menu choices based on site location information and presented in the display.

"The field crews were very positive about their experience. Training was minimal approximately five minutes. The crews reported that the application (app) was easy to learn and easy to use. The hardware could recognize several different accents and worked without issue. The test subjects all stated that they would use the app and recommend it to others.

"Duke Energy calculated that for a typical, four-day outage impacting 250,000 customers, the app would save around 12 hours of restoration time. This translates into \$8.25M for customers with an average of 900kWh (kilowatt hours) per month."

Simmins work has not gone unnoticed. In addition to Public Utilities Fortnightly, he&s been interviewed by the New York Times, The Economist, CIO Magazine, Christian Science Monitor, CIO, Forbes, the Associated Press, Boston Globe, CNBC, Sea Power, Electricity Today, T&D World, Intelligent Utility Daily, Electrical Contractor, Greentech Media, Smart Grid News, and Renewable Energy World.

Simmins and his wife Judith reside in Knoxville, TN.