

# University of South Florida: MEDICINE 'MARVEL' FOR MINIMALLY INVASIVE SURGERIES

**RICHARD D. GITLIN, Sc.D.**, is a State of Florida 21st Century World Class Scholar, a Distinguished University Professor of Electrical Engineering, and the Agere Systems Chair at the University of South Florida. He has over 40 years of leadership in several fields such as digital communication, wireless systems, data networking, and most recently bio-medical networking. Prior to his position at the University of South Florida, he worked for 32 years at Bell Labs and co-invented the widely used DSL technology. At his retirement he was Senior VP for Communications and Networking. Gitlin holds 47 patents, has published over 100 papers and co-authored a graduate textbook on data communications that was popularly utilized in academic institutions for over a decade. As a Charter Fellow of the National Academy of Inventors, member of the National Academy of Engineering and a Fellow of the IEEE, Gitlin continues to make huge impacts in the research world today.

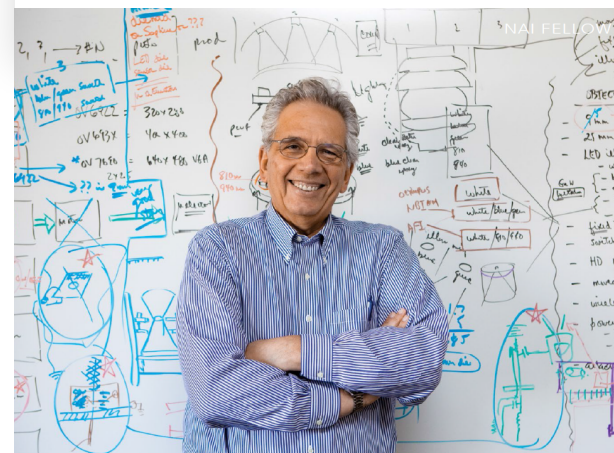
The likelihood of intelligent, wirelessly networked devices creating a paradigm shift in medicine and minimally invasive surgery is becoming more of a reality with Gitlin's breakthroughs in biomedical engineering research. Gitlin and his collaborators, the surgeons Drs. Alexander Rosemurgy and Sharona Ross, have invented a scalable network architecture and a set of devices, tools, and protocols that is expected to allow physicians to perform minimally invasive surgeries (MIS) faster, more cost effectively and

safer. The first of these devices, the MARVEL (Miniature and Anchored Remote Videoscope for Expedited Laparoscopy) camera module (CM), has been successfully tested in several vivarium experiments on porcine subjects. Wirelessly controlled motors in the CM enable 180 degree pan and tilt movement of the MARVEL CM. The CM wirelessly transmits the video stream to an external node. The CMs may be attached in multitude and networked inside the abdominal cavity wall through one incision site without occupying a trocar port. During MIS procedures, such an array of CMs can provide a wide-angle view with high resolution and minimize interference with traditional laparoscopic instruments and increases the safety of the procedure with the CMs providing a broad field of view. With all of these benefits, it is expected that the MARVEL system will facilitate a fundamentally new distributed-networking approach to MIS.

MARVEL technology not only ensures a shorter duration surgery but also realizes efficiency in its configuration. Because the CM includes light sources, a camera and a wireless transceiver, surgeons are able to operate with an extra surgical tool with one more available port. These benefits related to MARVEL will hopefully lead to faster, cheaper, and safer minimally invasive surgery.

## ABOUT THE UNIVERSITY OF SOUTH FLORIDA

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Source: National Academy of Inventors [NAI] 2013 annual brochure.