

News from the Savannah River National Laboratory

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Savannah River National Laboratory, Digitome, Team up to Detect Lung Ailments

Aiken, S.C. – The Savannah River National Laboratory and Digitome Corporation of Alexandria, Va., are collaborating on the development of a radiographic imaging methodology for the rapid detection of respiratory abnormalities, such as avian flu. The two have entered into a one-year Cooperative Research and Development Agreement, entitled Analysis of the H5N1 Influenza and other Respiratory Abnormalities, funded by Digitome.

Various contagious respiratory ailments, including the strain of avian flu that most concerns the experts, cause lung abnormalities that can be seen on chest x-rays.

This research is based on Digitome's patented "volumetric" x-ray technology, which reconstructs the full volume of an object – such as a lung – displaying any plane on any axis. This technology has been applied in a wide variety of uses, including detecting cracks in the internal structure of spacecraft components. The objective of the collaboration with SRNL is to produce a limited view, volumetric, digital radiographic imaging methodology that can detect salient features of the avian flu virus, as well as other communicable respiratory abnormalities. Digital radiography is an x-ray technique that does not require film, allowing images to be captured, processed and viewed rapidly.

SRNL has internationally recognized expertise in digital radiography and specialized training in the software being used by medical institutions to create, archive, transmit, and receive digital radiographic and photographic images. The laboratory will provide the expertise to ensure that digitized images produced with Digitome's method are compatible with that software. SRNL will also configure, calibrate and conduct proof-of-application testing of the technology. SRNL, which is operated for the U.S. Department of Energy by Washington Savannah River Company, is the applied research and development laboratory at DOE's Savannah River Site and is the DOE Office of Environmental Management's Corporate Laboratory. The National Institute of Standards and Technology's Physics Laboratory, a division of the U.S. Department of Commerce, has noted of SRNL's radiography expertise, "SRNL engineers have demonstrated their capabilities in all facets of x-ray imaging by developing several fully-functional x-ray computed tomography systems."

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In addition to SRNL and Digitome, this project will make use of researchers' expertise at the Medical College of Georgia for medical radiography and Talisman, Ltd. for its automated multi-media interviewing software application for capturing critical subject data to assist in image analysis

"Developing technology to find lung abnormalities may seem like an odd endeavor for us," says SRNL Laboratory Director Dr. G. Todd Wright, "but actually, it's an excellent fit with our existing missions. First, it makes use of SRNL's skills in digital radiography, an expertise that we have applied for years in support of the Savannah River Site and other Department of Energy missions. More than that, however, this research and development will result in technology that we can adapt to benefit our DOE customers, in tasks like evaluating the integrity of pinch welds or monitoring packages of nuclear material."

"In recent years," says Dr. George Wicks, who coordinates SRNL's interactions with the medical community, "SRNL has been exploring exciting new opportunities to collaborate with outstanding researchers in the medical field on the development of technologies that could make use of the laboratory's long-standing areas of expertise to benefit both the medical field and SRNL's traditional DOE customers." SRNL's participation in this agreement is led by Boyd Howard and other members of SRNL's Digital Radiography Imaging group.

Bill Dryden, VP Operations of Digitome Corporation said, "Digitome's volumetric x-ray technology is highly complementary to the accomplishments, skills and techniques of SRNL. Successful application development under this CRADA will provide another arrow in the quiver for 3-D imaging applications. We are delighted to be teaming up with such a competent technical group."

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