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QUESTION 4: STATEMENT REGARDING GOVERNMENT CONTRACT

The U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) Explosives Division has contracted Duke University to develop a flat-panel Advanced Imaging Technology (AIT) system for use in screening individuals passing through a checkpoint. The project is "AIT Panel System, Metamaterial Transceiver Based Compressive RF Imaging System". The contract number is HSHQDC-12-C-00049.

Duke has subcontracted Evolv Technologies, Inc. to develop Automated Threat Detection (ATD) and related imaging reconstruction and simulation capabilities. Additionally, Evolv has obtained the rights to commercialize the technology.

A brief description from the DHS-Duke statement of work is included below:

"The U.S. Department of Homeland Security (DHS) is committed to using cutting-edge technologies and scientific talent in its quest to make America safer. The DHS Science and Technology Directorate (S&T) is tasked with researching and organizing the scientific, engineering, and technological resources of the United States and leveraging these existing resources into technological tools to help protect the homeland.

In support of airport security, Transportation Security Administration (TSA) Officers need to be able to receive warning of possible threats (i.e., guns, knives, improvised explosive devices, homemade explosives) on individuals passing through a checkpoint. Advanced Imaging Technology (AIT) systems have been deployed to airports to detect and identify those concealed threats not reliably detectable by other methods.

Active radio frequency and millimeter wave (RF/mmW) imaging has gained acceptance for use in AIT systems as an effective non-invasive method of screening personnel for concealed weapons and contraband. This technology is effective for the detection of items concealed by common clothing materials including non-metallic and metallic threats such as solid and liquid explosives, handguns, and knives.

The performance of first generation scanners is limited by high capital and operational costs, vulnerability to simple countermeasures, image artifacts and limited resolution due to obscuration and subject pose, and lack of target specificity. The use of mechanically scanned transceiver arrays results in limited update rate as well as large size and high product cost, typically over one hundred thousand dollars.

The proposed project plans to overcome the performance, cost, and maintenance limitations of current AIT systems using five distinct but interrelated innovations:

- Flat-Panel Metamaterial Transceivers...
- Compressive Imaging...
- Task-dedicated RF signal-chain...
- Reconfiguration...
- Multimodal/Multiband Fusion..."¹

¹ Statement of Work for AIT Panel System, Metamaterial Transceiver Based Compressive RF Imaging System... U.S. Department of Homeland Security, Science and Technology Directorate, Explosives Division, Contract HSHQDC-12-C-00049.