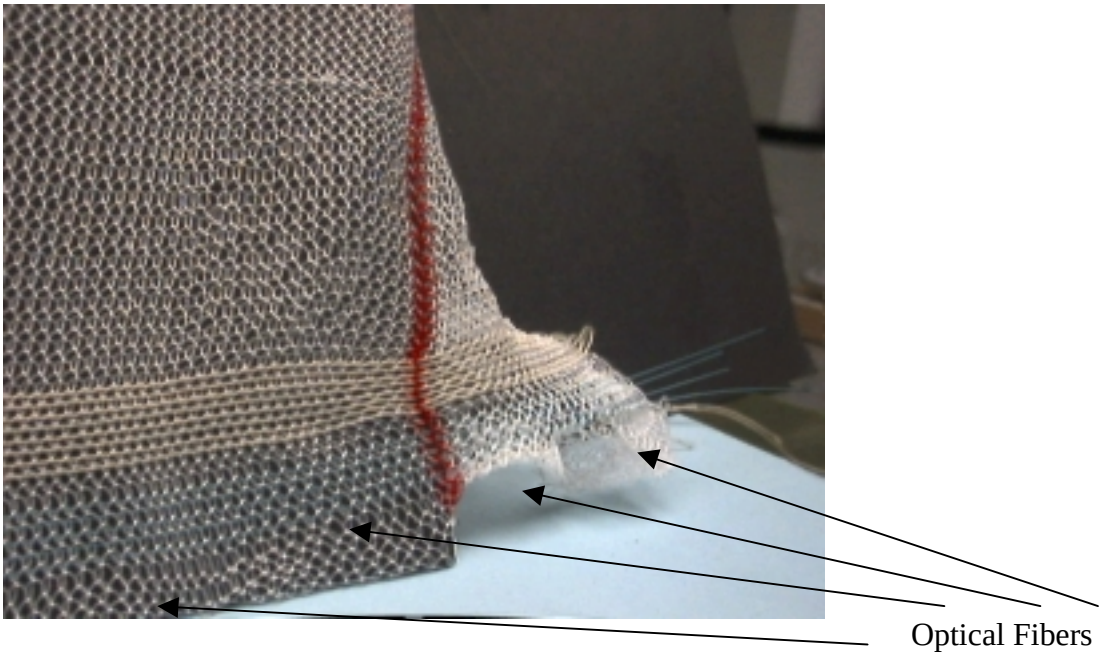
Smart Textiles

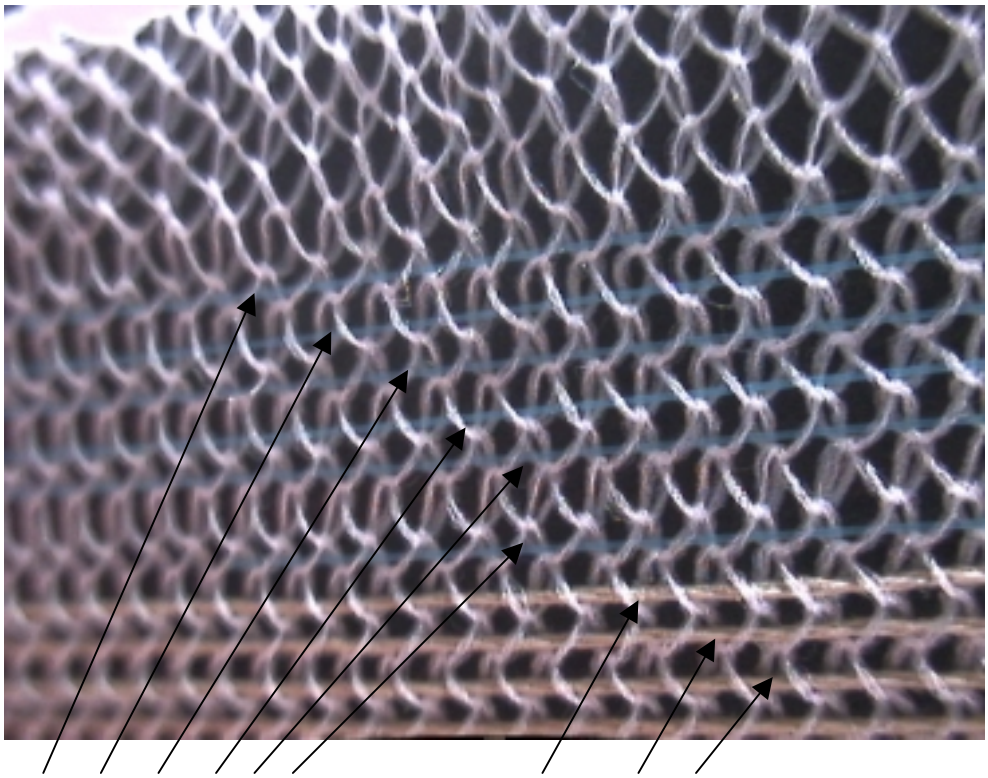
In accordance with the advancement of the Soldier Warrior Systems Technologies, this project is investigating and developing the methodology and the manufacturing processes for integration of electrical and optical conductive networks, miniature sensors, and electronic devices into clothing, webbing or other textile based materials that are worn by soldiers.

The Soldier Warrior Systems are equipped with several electronic communication and display devices that provide essential information and awareness to the ground soldier. Currently traditional conductors made of heavy cables with multiple copper wires are draped over the soldier's body to connect his weapon, computer, and other devices. Integrating lightweight wires and fiber optic conductors into the soldier's clothing or selective equipment will not only provide cost savings but will also provide a tremendous weight savings, an advantage of great importance to the soldier.

The developed technologies will form the basis for future opto-electronic textiles that can be used in many industrial, biomedical, aerospace, and military application.
The figures below illustrate examples on how fibers are integrated in textiles.



This knitting textile structure has six optical fibers, integrated in a straight line orientation



The structure includes six optical fibers and four fine ropes.
The ropes match with the size of electric wires