Hi-tech Research for Webbing:

Carrying Body Armour and Equipment

While body armor provides an indispensable defense, its weight and placement on the body exposes the wearer to neck, shoulder and back discomfort. The problem is not just the armor, but also the heavy equipment that soldiers routinely wear for hours and days at a time that can weigh more than 60 lbs - including rifles, ammunition, grenades, radios, medical kits, backpacks, water, and other supplies. A new generation of body armor systems is being developed. A body mapping pressure system by Sensor Products Inc., called Tactilus is developing new vests and carriage systems that optimally distribute the load that soldiers carry.

When a soldier complains that they feel pressure in a certain area, the pressure points change on the computer screen and pinpoint where the vest and armor need to be redesigned to improve the pressure distribution. Besides increasing comfort, the team says the new body armor will significantly increase the soldier's flexibility and maneuverability, which has enormous strategic advantages in the field.

Previously Sensor Product's systems had supported square or rectangular designs, such as mattresses for ergonomic testing. While they were optimistic, there were questions about whether the sensors' electronic lines could be cut and reconfigured to the vest. Three separate sensor pads needed to be used for the chest, back and waist, and clear color-coded body images and precise statistics had to be produced without signal interference.

Sensor Products split up the sensing points; rows of sensors were distributed into two connecting L patterns, with one L inverted to face the other to provide coverage for the neck, shoulders and trunk. A third sensor pad was configured to wrap around the soldier's waist. The software was broken up into multiple pieces for full system functionality. The sensors were then melded into the vest to serve as a guide for future prototypes