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Five Military Electronic Technologies Driving Consumer Products

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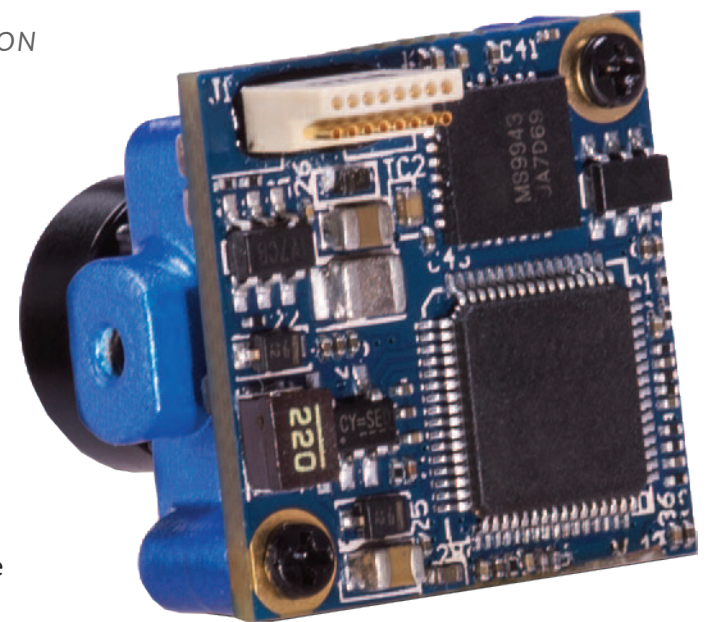
Military developed its first exoskeleton-assist devices to be mounted onto dismounted soldiers to improve their weight carrying ability and speed of travel on foot.

Weight was then supported by the extra structure of the hybrid leg that was part human and part machine. Electronics were often attached to detect pressure as well as to initiate hydraulic response equipment in the knee area. In time, full functioning human robots have emerged in the development process for the military. The electronics became popular in assisting amputees from military accidents and then in civilian hospitals.

Biomed sensors: In our daily medical field, biosensors followed the exoskeleton technology and now offer sense of touch and pressure pads on prosthetic hands as well as can transmit data from a motion sense module mounted on an amputees head that sends Bluetooth signals down to the lower leg and foot to tell it to walk for the patient. Biosensor signal are very small that use nano-sized cable and connectors for board to board signals and to route low current battery power to the gears that respond in wrists, knees and feet.

FLIR and image collection: Forward looking infra-red imaging systems are designed for night operations in the military.

Camera technology as well as binoculars and other surveillance devices were exclusively military for years. Serious multi-frequency modules are often mounted on the bottom front nose of helicopters. Today we can buy and use night vision cameras, goggles and binoculars for hobbies such as hunting and or watching wildlife and making educational films. Security, police and rescue teams use night vision. Night vision head mounted movie devices are also popular. Some of the most significant advances in FLIR imaging is when it is applied in the medical industry for esophageal scopes or other camera systems used for inner-body inspection. This reduces surgery and/or helps define specific position of items being operated on.



Drones and UAVs were originally developed for flying aircraft targets to help train navy gunnery systems to hit in-bound enemy aircraft. This was triggered from the surprise from the Kamikaze era in the later part of WWII. Drones were operated using old hand held analog frequency signal boxes as the Navy guns tried to shoot them down in the air overhead. The military drone got its first cameras for sending images during Vietnam where it was difficult to see from the ground. Today's drones are used widely by hobby to industrial uses with cameras onboard. They are used for watching crowd control during public events, taking great photos of scenery, border control as well as building inspections.

Newest ones are well controlled and often connected to GPS signaling for position monitoring and for matching images to a map. Forestry, agriculture and even petroleum use smaller civilian drones in their business. Connectors are notably small and lightweight to allow longer flight times. Electronics must be quite rugged to sustain constant vibration of small UAVs and to survive shock of some landings.

The FAA maintained control of drones, for home based remote-controlled airplanes for kids and hobbies for years. With the shift to digital transmission being released for other civilian technologies like cell phones, small hobby drones were developed and used for radio control flights.



*CAMERA SENSOR PODS UNDER AN UNMANNED
AERIAL SURVEILLANCE DRONE AIRCRAFT.*

Software Defined Radio (SDR) was initially designed for military applications such as the Joint Tactical Radio (JTR) and has now moved into other specialty defense programs. SDR has also become a key support technology in many other commercial and non-military areas, such as from communications with the international space station, specialty police radio scanners, and emergency services from ambulance and fire department communications to forest fire crews directing aircraft above. Recently portable radio astronomy devices are using it for satellite and planetary tracking. Finally we see international cyber communications security offices using SDR systems.