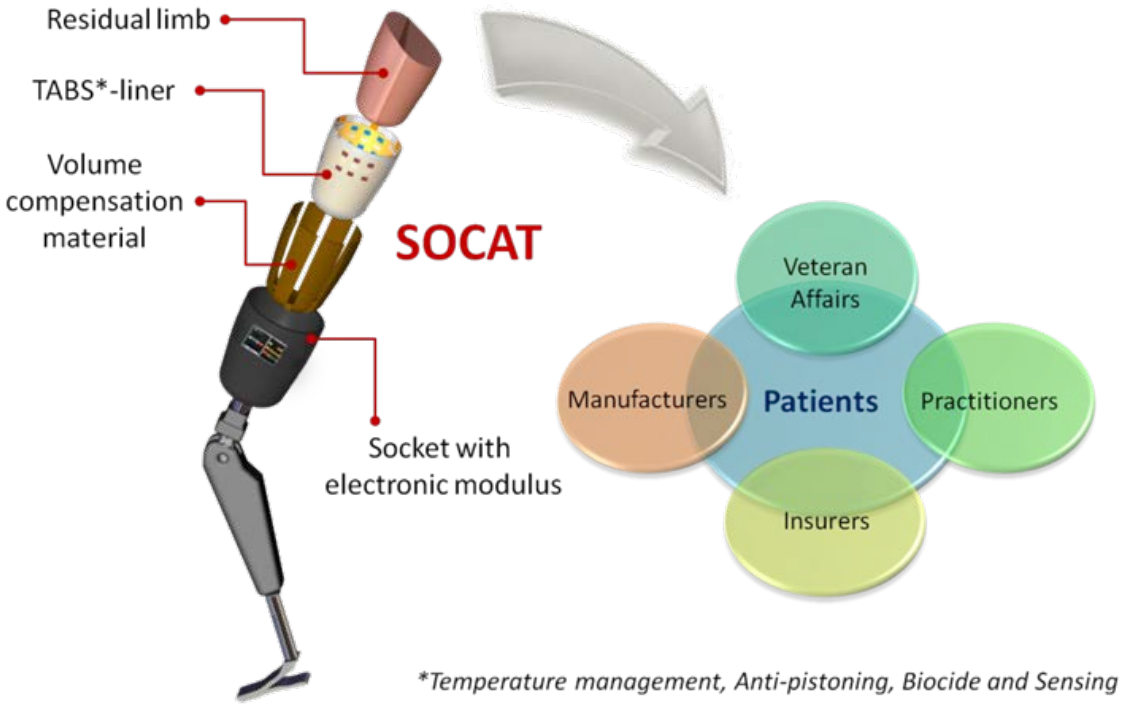
SOCAT: Socket Optimized for Comfort with Advanced Technology

Funded by the Department of Veterans Affairs Innovation Initiative (VAi2) Program

To substantially improve amputees' comfort, functionality, gait and mobility, the SOCAT team is taking an entirely different approach to designing the next generation of prosthetic socket system. This program leverages latest advances in innovative materials, advanced manufacturing and printed electronics to build a prosthetic socket system with an unprecedented degree of functionality and integration to meet the critical needs for advanced prostheses for the VA community and beyond.



Integrating several enabling technologies into a holistic above-knee socket system:

1. **Volume & shape change management** with advanced materials that adapt in real time to residual limb swelling and volume variation.
2. **Pistoning control and skin breakdown prevention** via an innovative interface material embedded with nanoparticles.
3. **Temperature and sweat control** by solid state active cooling using an array of miniature thermoelectric devices and phase change materials.
4. **Monitoring and early warning of adverse situations,** such as abnormal pressure from improper gait or pistoning. Protecting the socket user with advanced and reliable sensors fully embedded in liners, and allowing the practitioner to collect real-time data for subsequent analysis and treatment.

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