

IBA Case Study

*BioGears® – Telemedicine and Advanced Technology Research Center (TATRC),
US Army Medical Research and Materiel Command (USAMRMC)*



Executive Summary

IBA supported TATRC's research and development activities in the areas of telemedicine for the military health system by assisting in the developing of BioGears® under a cooperative agreement with Applied Research Associates, Inc. (ARA) as its primary developer. BioGears® met the training needs of the military and has been used by government and academia as a training tool, a manikin back-end, and research platform (www.biogearsengine.com). BioGears® is also used as a standalone application and integrated with simulators, sensor interfaces, and models of all fidelities.

TATRC's Challenge

TATRC was in need of supported research and development activities in the areas of telemedicine for the military health system to improve warfighter readiness and health outcomes.

Medical educators, trainers, developers, and manufacturers require medical training content that includes consistent, validated physiology responses. TATRC also recognized a need for a common, open-source/standard "Human Operating System" which allows for device interoperability, modularity and scalability of Medical Modeling & Simulation (MM&S) research and development efforts. This concept provided a new capability and capacity to evolve advanced medical simulation across a wide array of platforms, manufacturers and research efforts.

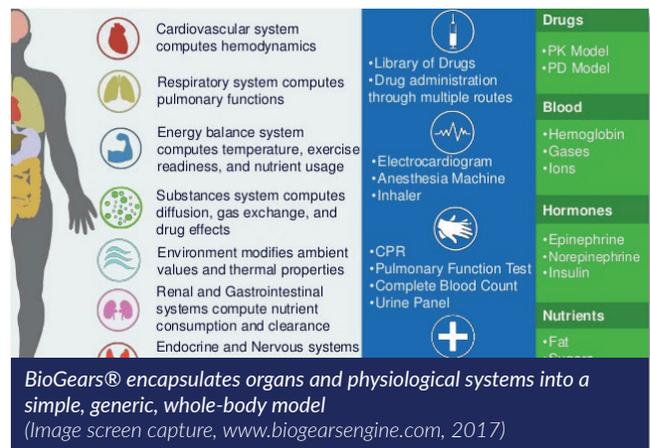
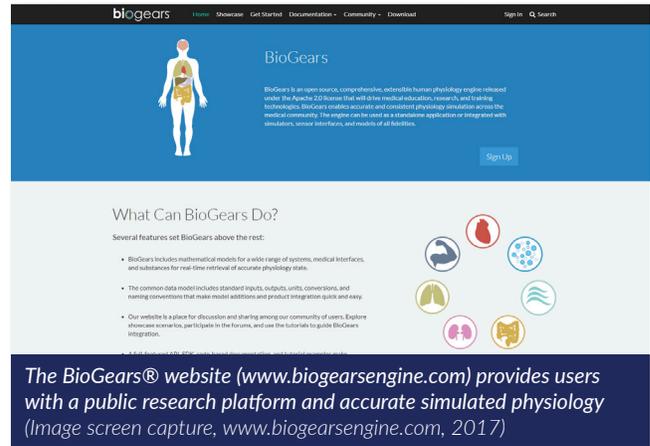
Solutions that fit TATRC

BioGears® is a computationally efficient, modular, extensible, virtual standardized physiology patient for accurate, and dynamic scenario-based simulation. The BioGears® software solution includes a common data model (CDM) so users may easily extend or add new models. BioGears® also provides an application programming interface (API) for dynamic retrieval of the accurate physiologic state for easy integration with immersive medical education software and hardware tools.

Based on open architecture and modular extensible framework, BioGears® provided TATRC the option of expanding for future requirements and is currently integrating training programs in government and industry to provide a scalable system for emerging simulation needs.

TATRC's Benefits

- BioGears® is provided free-of-charge under an extremely permissive Apache 2.0 license and provides significant value by reducing program costs for the defense medical community.
- The BioGears® architecture provides a modular, extensible framework for expansion and integration, which lowers the barrier to developing any future simulations allowing users to more quickly produce deliverables.
- BioGears® expands the body of knowledge regarding the use of simulated physiology by engaging the community to develop and extend physiology models.
- The BioGears® physiology engine includes a robust support system which contains over 1,400+ pages of detailed methodology, code documentation, tutorials, an open-source SDK, troubleshooting via forums, phone calls, and face-to-face discussions.



5,000+ downloads



adopted by
6 universities



expandable
& scalable