

Lightening the Thermal Load

2014 Human Systems Conference

“The Human in Defense Systems: Progress & Challenges”

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Agenda

Background

Current State of the Art

On the Horizon – capabilities needed

Next Steps

Background

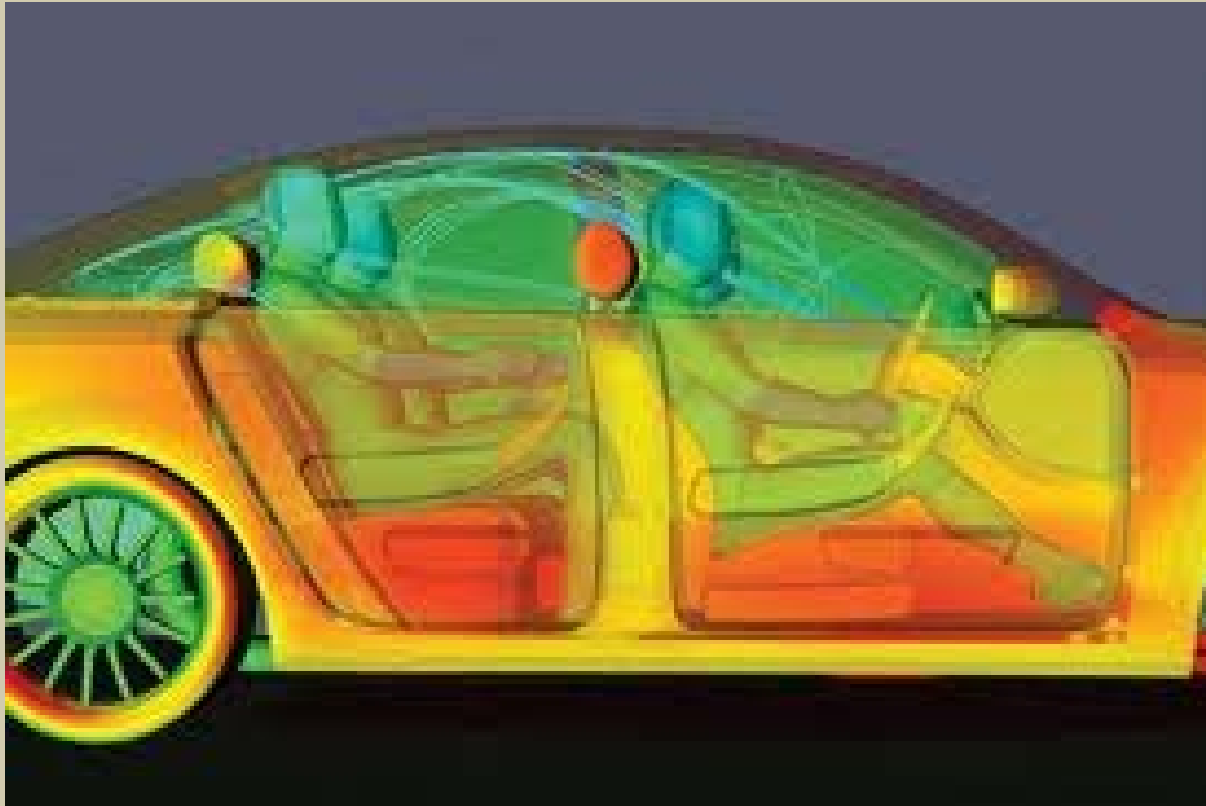
- “Heat-related injuries are significant threats to the health and operational effectiveness of military members and their units.” (Armed Forces Health Surveillance Center, 2011)
- 46,000 Cold Weather Casualties in WWII

Background

- Modeling for measuring mitigation
- Early Efforts
- The Institute for Environmental Research
- The role of the IER in research, test, and development

Current State of the Art

RadTherm - ThermoAnalytics



Current State of the Art

The Human Thermal Performance Simulation (HUMATHPERS).



On the Horizon-capabilities needed

“There is a compelling requirement to develop human performance models that measure individual load vs. combat effectiveness ... that enable systems-level tradeoff analyses. Current models lack fidelity and have not been validated with data.” (Naval Research Advisory Committee (NRAC), 2007).

On the Horizon-capabilities needed

- Technologies to sense, assess, and augment human performance capabilities
- The “Quantified Warrior”
- Thermal Load and its effect on operator performance
 - 1) physical effects
 - 2) psychological effects

Next Steps

- Predicting performance of humans in extreme conditions
- Real Time Monitoring
- Incorporation in other simulated environments – mission rehearsal, etc.
- Enhanced measures of mitigation and casualty prevention

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