

TALOS TIME:HACK

A Quarterly Update for the TALOS Extended Network



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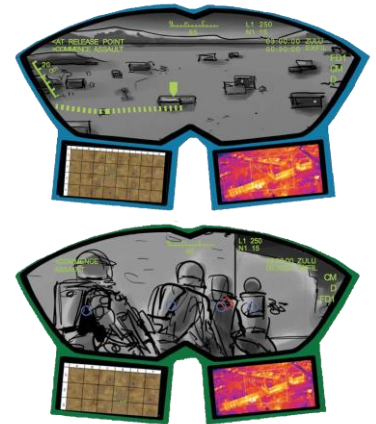
2015 Rapid Prototyping Event... TALOS' second Rapid Prototyping Event (RPE), held in Tampa/St. Petersburg, FL from 3-26 June 2015, was primarily focused on further developing the TALOS Integrated Helmet Prototype concentrating on Visual Augmentation Systems, Bio-Sensor Infused Cooling Base Layer, C4I and Situational Awareness (SA) technologies.

What are the key tenets of an RPE?

- Provides a unique, rapid collaboration environment
- Combines Subject Matter Experts (SMEs) from Industry, Academia, Government & Users (SOF Operators)
- Accelerates technology development
- Tackles hard problem sets
- Enables physical demonstrations of candidate technologies & interfaces through 3D printing, CAD models, illustrations, storyboards, design documentation and developmental demonstrations

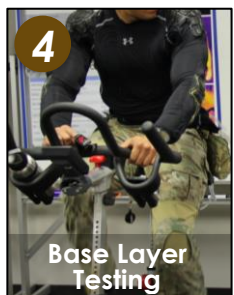
June 2015 RPE Fast Facts:

- 120+ SMEs from 30 external organizations
- Five current Operators provided real time feedback
- Leveraged SOCOM's Mobile Technology & Repair Complex (MTRC) to assist prototyping efforts



Artist's rendering of a
TALOS HUD concept

Design Team Highlights... Key outcomes from this RPE's Design Teams are as follows:



1. Demonstrated improved SA using multi-spectral sensors
2. Streamed continuous real-time medical data from a SOF Operator through the TALOS computing architecture over tactical wireless network to a Heads Up Display (HUD)
3. Finalized FIRE design to include full 3D mockup and built a combined Mobile Ad hoc Network (MANET) of three industry competitors utilizing a credit card-sized PC/Router
4. Built base layer prototype that integrated medical monitoring sensors & thermal regulation for an Operator
5. Produced a 3D printed helmet prototype that facilitates all TALOS subsystems, a physical helmet support system & a unique padding design

2015 SOFIC... JATF-TALOS held a series of non-traditional sessions during this year's SOF Industry Conference (SOFIC) to energize industry and provide non-traditional partners/small businesses an opportunity to present novel solutions in support of TALOS technology needs.

5 Minute Solution Sessions: Through a FedBizOps solicitation, JATF-TALOS overviewed some of their challenges and offered industry the unique opportunity to share their solutions. In three, "5 Minute Solution Sessions," nine individuals presented their company's ideas to panels comprised of JATF-TALOS members who proposed questions and provided feedback.

214
people went
to at least one
TALOS event
at SOFIC

Think Tanks & the SDK: The JATF held a Think Tank focused on Power & Energy, providing an opportunity for industry to propose novel solutions to TALOS' energy needs, along with a Software Development Kit (SDK) rollout from the computing team that enabled coding during the June RPE.

Exoskeleton Control Theory Sprint...

The Doolittle Institute facilitated this event on behalf of TALOS at their collaborative SOFWORX facility, located in Tampa Heights, from 21-23 JUL 15. During this sprint, DoD, Academia, and Industry SMEs tackled exoskeleton controls strategies, human-machine interface sensing and control system architecture challenges in small teams.

WAY FORWARD: Continue to refine Exoskeleton Controls Architecture.

- Conduct a study to baseline the maturity of current Control Theory, determine the level of control required to operate an exoskeleton in combat and quantify the nature & level of technology gaps to be filled to produce a TALOS exoskeleton
- Create focus groups based on technology gaps
- Promote focused sensor tech development by partners to shorten development time/costs



Armor Mosaic Design Session... In this Doolittle-hosted session from 3-5 AUG 15 at SOFWORX, small teams of illustrators, mechanical engineers, fabricators, CAD modelers, exoskeleton experts, armor SMEs and SOF Operators collaborated to design conceptual armor mosaics for the arms, legs and torso regions.

As shown above, operators tested rudimentary mock-ups of designs developed through team ideation, illustrations and CAD—comparing maximum protection vs mobility. These will inform the armor/exoskeleton integration challenges and design configurations. Next step is to 3D print weight-representative shapes and start integrating onto an exoskeleton.

Upcoming Events... Events that will help guide TALOS development in 2015 include:

- **22 October 2015:** SOF Warrior Industry Conference (SOFWIC), Tampa Marriott Westshore, Tampa, FL
- **27-28 October 2015:** Divergent Collaboration Event on Actuation, SOFWORX, Tampa, FL
- **2-13 November 2015:** Powered Exoskeleton Internal User Assessment
- **TBD November 2015:** Software Tech Sprint, Tampa, FL
- **TBD November/December:** Establishment of Helmet/VAS and Exo/Armor Integration Test Beds, Tampa, FL

Tech Transition Update

- Load-Bearing Passive Exoskeleton (in progress)
- Smaller Form Factor SATCOM Antenna (Prototype delivery in 4QFY15)