NASA SBIR/STTR Technologies

Reconfigurable EVA Radio with Built-In Navigation Capability

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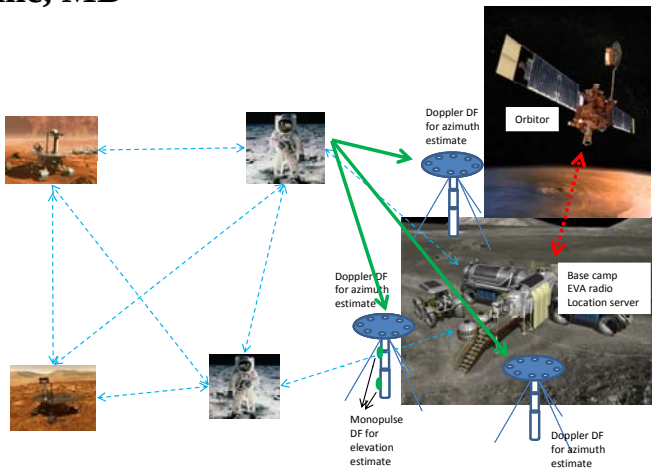

Identification and Significance of Innovation

A power-efficient miniaturized reconfigurable EVA radio system with built-in 3D navigation capability is proposed. It uses the evanescent mode cavities RF MEMS tunable filter and software defined radio technologies to achieve extreme miniaturization, power saving, and reconfigurability.

Expected TRL Range at the end of Contract (1-9):
The end of Phase I: TRL3
The end of Phase II: TRL4
2012: TRL5

Technical Objectives and Work Plan

- Generate an overall system design
- Design the EVA radio
- Design the MEMS tunable filter
- Develop the 3D navigation function
- Develop middleware for link adaptation
- Evaluate the performance using simulation and sensitivity analysis
- Estimate the power consumption, mass, size, and reliability

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Sys design	xxxxx					
Design SDR		xxxxx	xxxxx	xxxxx	xxxxx	
Design MEMS filter		xxxxx	xxxxx	xxxxx	xxxxx	
Design nav. function		xxxxx	xxxxx	xxxxx	xxxxx	
Design middleware				xxxxx	xxxxx	
Simulation/analysis					xxxxx	xxxxx
Estimate pwr,size						xxxxx

NASA and Non-NASA Applications

NASA Applications:
- communications between rovers and spacecraft
- astronaut EVA communications
- Space port communications and asset tracking

Non-NASA Applications:
- Warfighter/Firefighter Situation Awareness System
- Autonomous navigation of Unmanned Vehicles

Firm Contacts

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NON-PROPRIETARY DATA