



WIRELESS MESH STANDARD IMPLEMENTATION/EVALUATION

BACKGROUND

Mesh networking technology could be important for scaling a lunar-surface wireless network in a dynamic extra-vehicular environment. An IEEE standardized (but never commercialized) mesh has been evaluated in the past. <https://open80211s.org/> A newer development is an open mesh standard with broad industry buy-in, Wi-Fi EasyMesh. This is a controller-based mesh intended for relatively stationary scenarios like Wi-Fi extenders in a house.

An open-source implementation exists, <https://gitlab.com/prpl-foundation/prplmesh/prplMesh>. With NASA's xEVAS contract, two spacesuit vendors were selected, guaranteeing lunar spacesuits will be produced by multiple vendors. These suits could need to communicate directly with each other in the event infrastructure was unavailable, potentially for crew to work together to resurrect the infrastructure or to evacuate or to explore regions with breaks in coverage.

PROBLEM/DESCRIPTION

Can EasyMesh be adapted as a standards-based interface between space suits? Produce a proof-of-concept, or additional proofs on different platforms or using different generations of Wi-Fi. How difficult is it to implement? What scale of platforms can it be installed on? Stretch goals-- demonstrate the concept: Is it battery aware? Radio aware? Do controllers elect a controller? How long do route switches take? How much data can it carry?

DELIVERABLES: Develop or attempt to develop a working concept. Report describing challenges of developing a working proof of concept, and evaluation techniques and test results.

DESIGN TEAM PROFILE

NASA MENTOR:	Chatwin Lansdowne
LEVEL:	Upper Division Students [SOPH/JR/SR]
MAJOR / DISCIPLINES:	CS, CE, EE, AE, ME
TEAMS:	Mentor may accept more than one team
DURATION:	Two-Semester Project