

## JSC Senior Design Project and or Intern Request Form

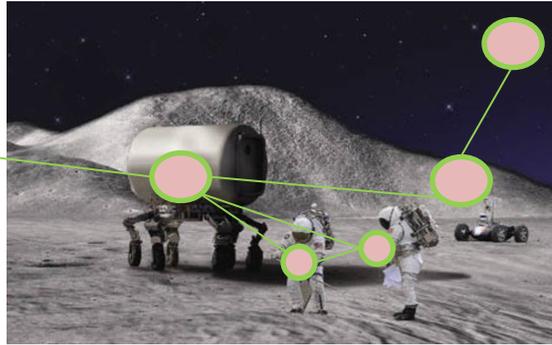
Project Title:	Prototype of a space WiFi mobile, disruption-tolerant, ad-hoc mesh network		
Project Description:	Develop and demonstrate a future space communication network using IEEE 802.11 mobile mesh node with integrated Disruption Tolerant Networking (DTN) protocols.		
Choose most appropriate area of research:	<input type="checkbox"/> Planetary Surface Systems <input type="checkbox"/> Ground Operations <input type="checkbox"/> Propulsion <input checked="" type="checkbox"/> Spacecraft <input type="checkbox"/> Human Health Program		
Program Applicability	<input type="checkbox"/> ISS <input type="checkbox"/> CEV/SLS <input type="checkbox"/> Commercial Crew <input type="checkbox"/> Asteroid <input checked="" type="checkbox"/> Adv. Technology (AES/STMD)		
Choose one project:	<b>Roles and Responsibilities of Senior Design POC/Mentor</b>		
<input checked="" type="checkbox"/> Senior Design	I have coordinated with my management and I am able to support at least three (3) teleconferences (kick-off, mid-term, and final) with a Senior Design Project Team at a university that chooses my project. I understand that I shall not provide any sensitive or classified information to the Senior Design Project students of faculty. I will provide feedback to the project team if requested.		
<input type="checkbox"/> Internship	I have coordinated with my management and I am able to support an intern. If an intern is selected for my project, I will provide an environment where an intern can grow and we may have a mutually beneficial and successful internship. My project will be able to provide a desk space, work area, and computer for an intern. I will review any final report or presentation that the intern generates during his/her internship and submit it to Export Control (DAA) for approval. This project opportunity will be posted in OSSI, through the office of Education (use exact same title). OSSI website: : <a href="https://intern.nasa.gov">https://intern.nasa.gov</a>		
Check desired Timeframe for Internship:	<input checked="" type="checkbox"/> Year long <input type="checkbox"/> Summer <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring		
Check desired Major/Minor(s) for Internship:	<input checked="" type="checkbox"/> Aerospace Engineering <input checked="" type="checkbox"/> Aeronautical Engineering <input checked="" type="checkbox"/> Astronautical Engineering <input type="checkbox"/> Biomedical Engineering <input type="checkbox"/> Chemical Engineering <input type="checkbox"/> Civil Environmental <input type="checkbox"/> Health Engineering <input checked="" type="checkbox"/> Electrical, Electronic Engineering <input checked="" type="checkbox"/> Computer Engineering <input checked="" type="checkbox"/> Engineering Physics <input type="checkbox"/> Industrial Manufacturing Engineering <input type="checkbox"/> Materials, Metallurgical Engineering <input type="checkbox"/> Mechanical Engineering, Mechanics <input type="checkbox"/> Nuclear Engineering <input type="checkbox"/> Astronomy, Astrophysics <input type="checkbox"/> Chemistry <input type="checkbox"/> Optics <input checked="" type="checkbox"/> Physics <input type="checkbox"/> Atmospheric Sciences <input type="checkbox"/> Geography <input type="checkbox"/> Geosciences <input type="checkbox"/> Oceanography <input type="checkbox"/> Natural Resource Management <input checked="" type="checkbox"/> Mathematics, Applied Mathematics <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Astrobiology <input type="checkbox"/> Biology <input type="checkbox"/> Biochemistry/Biophysics <input type="checkbox"/> Microbiology Bacteriology <input type="checkbox"/> Chemical Engineering <input type="checkbox"/> Other, please specify:		
Mentor Name:	Chatwin Lansdowne	Mentor's E-mail:	chatwin.lansdowne@nasa.gov
Title & Organization:	Communications Engineer/EV6	Phone #:	281-483-1265
Alternate POC/Mentor Name:	Adam Schlesinger/EV6	Alternate's E-mail:	adam.m.schlesinger@nasa.gov
Education Office Signature and Date:		Intern Mentor's Signature & Date:	
As supervisor/manager, I approve of the above named individual as Senior Design Project POC of Intern Mentor.		Supervisor/Manager's Signature & Date	/s/David.D.Lee 06/17/13
(For Intern Request Only) As Administrative Officer, I am aware that the above named Intern Mentor has submitted a request for an Intern.		Administrative Officer's Signature & Date:	

# WiFi Mesh Router Integrated with Disruption Tolerant Network Protocol Support

**Project Requirements / Constraints:** Develop and demonstrate an IEEE 802.11 mobile mesh node with integrated Disruption Tolerant Networking (DTN) protocols.

## Desired / Expected Outcomes:

Emerging mesh protocols offer a method for to be used for providing proximity in locations that do not have pre-deployed communication infrastructure. Disruption (DTN) is used to provide end-to-end retransmission path contains network node constantly connected, and bandwidth is at a



enabling IEEE 802.11 communication links dedicated Disruption Tolerant Networking reliability when the pairs that are not premium.

Inexpensive wireless routers can support network-attached storage which can be used to develop and demonstrate the functionality of integrating DTN nodes into a mesh.

A feasible approach would be to start from OpenWRT or a qMp (quick mesh project) installed on a supported router supports USB network-attached storage (like TP-Link modify the router to incorporate a DTN implementation such (<http://code.nasa.gov/project/interplanetary-overlay-software-distribution-dtn/>) or DTN2 (<http://sourceforge.net/projects/dtn/>). OpenWRT is built on ION and DTN2 are Linux compatible.



derivative like which also WDR3600). Then as ION [network-ion-](http://code.nasa.gov/project/interplanetary-overlay-software-distribution-dtn/) Linux, and both

The objective of this study is to integrate existing technologies to produce a prototype of a mobile, disruption-tolerant, ad-hoc mesh network.

## Project Lead Contact Info:

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