SpaceGAMBIT Project Registration Form

1. Project Title
SPEDCAP - **SP**ace **ED**ucation **C**ontent **A**nd **P**romotion

2. Primary Contact

3. Project Summary
Documenting and promoting the DIY Space Revolution. While there are many projects and educational initiatives, projects often has to re-invent the wheel each time. The goal of this project is to provide a comprehensive online website that will provide educational content (while complying with ITAR) for both the education and the space communities.

4. Relevance to SpaceGAMBIT Mission
By documenting and provide free resources on space projects and applications, this will help lower the bar to starting a space (or near space) project. Whether it's a school looking to launch an amateur rocket or a hacker space wanting to fly their own high altitude balloon - this website will provide resources to get started.

5. Project Description
MAKE Magazine covers general electronics and crafts, but where does the aspiring rocket scientist go to learn more about building a space project? While many websites provide training and education on general engineering and design skills, very little information exists about applying them to space projects. This leads many projects to start from scratch instead of building off the work of others to push the envelope. Open Source Software has been doing this for years and Open Hardware is just beginning to. ITAR plays a role in this lack of space knowledge but cannot explain the entire lack of education content.

In fact many space projects do not fall under ITAR and are posted online. (including NASA - https://github.com/nasa) But each of these projects exists as a silo to the others and if the project closes or is not maintained, that institutional knowledge is lost to the public. The DIY Space Community needs a "MAKEzine" for DIY Space projects, an online repository for related news and knowledge. In addition to documenting existing projects, we are collaborating with the Silicon Valley Space Center to work on a PongSat project. The results of this project will be documented and shared with the public.

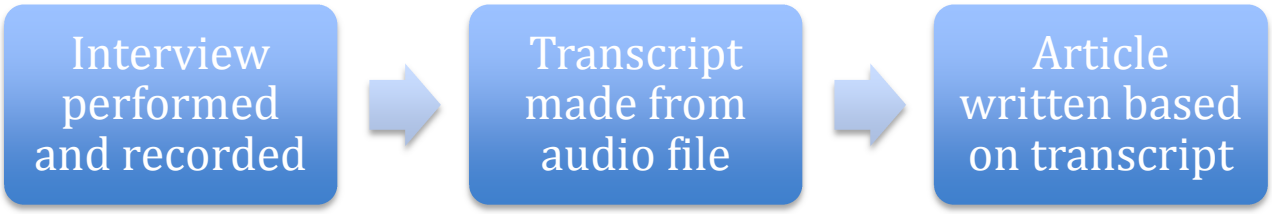
Why This Project Is Different
Most space websites fall into one of two categories: Project sites maintained by engineers or media sites written by journalists about the space industry. SPEDCAP will be written and maintained by the Principal Instigator who is both an Aerospace Engineer and an MBA graduate with an emphasis in Marketing & Social Media. This perspective will provide the website with a unique vantage point combining educational content with marketing and promotion.

PongSat WorkShop
Based in Silicon Valley, the Silicon Valley Space Center will join Team Murphey in a joint PongSat Hangout in mid-July to engage the members and guests of the Hacker Dojo in the development of innovative sensors for a JP Aerospace balloon mission to the stratosphere. Previous activities at the Hacker Dojo, in partnership with the AIAA-SF chapter, have included a monthly talk series on small payloads and a sub-orbital workshop. The hangout envisioned will include members of the Silicon Valley Hacker Dojo community along with students from the Computer Village in St. Louis, Missouri, Broward College in Fort Lauderdale, Florida, and SpaceTrips4US in San Paulo, Brazil. This distributed team has been working on the joint development of sub-orbital payloads described in a separate proposal to Space Gambit and has considerable experience in the hosting and recording of hangouts for collaborative research and education projects. The Pongsat hangout will be a one-day event that enables hackers to conceive, development, and deploy a pong sat for stratospheric mission through Team Murphey and JP Aerospace. Approximately 20 - 40 Pongsats will be provided by SVSC and their respective collaborators. The requested SVSC budget is to cover planning and hosting of the hangout with support from Computer Village and SpaceTrips4US and in collaboration with Team Murphey.

How Will We Create Content
This project will include 3 approaches to create content:

1. Articles generated from expert interviews
2. Guest Posts by projects
3. Informational Articles written by the team

We will utilize the following process to quickly and accurately create articles from domain expert interviews:



We have identified a company that will transcribe audio for $1/minute and includes any needed revisions/changes. We will also use an online service called Grammarly to check that content that is easy to read and follows proper grammar/punctuation rules.

Promoting the Content
Creating useful content is not enough if no one is able to find it. Part of our project includes promoting articles online to relevant sites. This serves two purposes, first will raise awareness in the space community about the website. Second, it will create links back to the site and will improve our search engine ranking for those related keywords. For this purpose the project will also use two Search Engine Optimization tools: SEOMoz and BuzzStream. SEOMoz will help us track our keyword rankings in all major search engines. BuzzStream will help link building by identifying and prioritizing relevant backlinks and track our efforts.

6. Methods and Implementation Plan
a. Objectives
Publish a comprehensive (ITAR compliant) online resource for space related educational projects and knowledge for the Maker & Hacker community.
b. Tasks
We have identified the following domain experts and will reach out to them for interviews:

Name	Organization
[redacted]	NanoRacks
	NASA
	Phonesat-Alumni
	Phonesat-Alumni
	Rocket Mavericks
	Rocket Mavericks
	Ardusat
	Kicksat
	Evadot
	Skycube
	Space Lawyer
	Altius Space Machines
	eSpace Center for Space Entrepreneurship
	Adler Planetarium-Far Horizons Project
	Made In Space
	Astrohack
	JP Aerospace
	Open Space University
	Rocketry.org
	Iowa Amateur Rocketry Group
	Iowa Amateur Rocketry Group
	Jacobs Rocketry
	Wotzup
	SugarShot to Space
	Frontier Astronautics
	Moon Express/Dynetics/Rocket City

[redacted]		Cal Poly
		University of Toronto
		Gauss Team
		ISIS Netherlands
		NanoRacks
		Kentucky Space
		University of Kentucky
		Utah State University
		Montana State University
		University of Michigan
		Cal Poly
		Morehead State University
		Cal State LA
		Space Quest
		St. Louis University
		University of Texas - Austin
		Cornell University
		Santa Clara University
	los	San Jose State University
		Valley Christian High School
		NCASST
		Cal Poly -Pomona
		Sonoma State University
		MySpectral
		XL Space Systems

We have identified a proposed list of research topics. While this list is extensive, articles from interviews may cover multiple topics.

Proposed Research Topics

General

1. Space rated materials
2. How to get started with spacecraft electronics
3. What are pocketQubes?
4. Spacecraft on a chip
5. The essential guide to soldering electronic components for satellites
6. Starting your own space hardware business
7. Spacesuit design 101
8. Testing your spacesuit
9. How many solar panels does your pocketQube need?
10. Designing electronic hardware for your pocketQube
11. Writing a business plan for your space hardware business
12. Finding investors for your space hardware business
13. Should you crowdfund your space project?
14. Funding options for your space project
15. Promoting your crowdfunding campaign
16. What is bit flipping?
17. Everything you need to know about thermal vacuum chambers
18. Using Arduino in Space
19. MySpectral - an open hardware spectrumphotometer

Building Hardware

1. How to create design schematics like a pro
2. Working with a machine shop
3. How to find a good machine shop
4. Working with valves & Regulators
5. Bend metal tube like a pro
6. Sizing valves
7. Everything you need to know about quick disconnect fittings
8. Finding a quality supplier for your rocket or satellite project
9. Building hardware – should you make it yourself or outsource?
10. Working with a Printed circuit board manufacturer
11. Printed circuit boards – off-the-shelf or custom-made?
12. Using and working with Eagle files to create printed circuit boards
13. Creating hardware blueprints the machine shop can actually use

Cubesat

1. Cubesat propulsion options
2. Communicating with your cubesat
3. Sensors for your cubesat
4. Cubesat operating systems
5. What Orbit should your cubesat be in?
6. Attitude determination and control options for cubesats
7. Determining power requirements for your cubesat
8. Effects of radiation on cubesat hardware
9. Cubesat thermal management

10. How to build your own cubesat structure
11. Determining the size of your cubesat
12. Getting radio spectrum for your cubesat
13. DIY antennas for cubesats
14. How many solar panels does your cubesat need?
15. Vibration testing your cubesat
16. Performing structural analysis on your cubesat
17. Thermal testing your cubesat
18. How to get a free launch for your cubesat
19. What kind of missions can a cubesat perform?
20. Cubesat battery guide

High Altitude Balloons

1. Getting started with High altitude Balloons
2. High Altitude Balloon legal issues
3. Payloads for your High Altitude Balloon
4. How to determine your balloons altitude
5. Building your own PongSat
6. Taking HD video with a High Altitude Balloons
7. How big should your balloon be?
8. Tracking and retrieving your High Altitude Balloon

Rocketry

1. Experimental rocketry for beginners
2. How to determine your rockets altitude
3. Making rocket igniters from nichrome wire
4. FAA regulations and rocket launches
5. How big should your rocket parachute be?
6. Metal or composite – which one is right for your rocket?
7. Making your own carbon fiber rocket tube
8. Working with hydrogen peroxide as a rocket fuel
9. Testing your liquid fuel rocket engine
10. Which CAD program is the best to design rocket hardware?
11. How to make a rocket engine test stand
12. How to find a place to launch your rocket
13. Working with the launch range – what you need to know
14. Working with the FAA to create your own suborbital launch range
15. The difference between regenerative and ablative rocket nozzles

c. Time allocation

Time will be allocated in the following:

Action	Percent Allocation
Outreach – contacting experts, coordinating interviews and promoting content	10%
Interviews	20%
Transcription	25%
Article Writing	30%
PongSat Workshop and Construction	15%

d. Milestones and Deadlines

Assuming we are able to interview each person on this list, we will need to interview 4 people per week to meet the August 30, 2013 deadline.

Month	Milestones completed
May 2013	16 interviews, 18 topics
June 2013	16 interviews, 18 topics
July 2013	16 interviews, 18 topics PongSat Workshop
August 2013	3 interview, 21 topics Pongsats successfully flown

8. Budget

Item	Description	Transcript Cost
Jeff Manber Interview Transcript	60 Minute Interview	$60.00
Matt Reyes Interview Transcript	60 Minute Interview	$60.00
Ryan Hickman Interview Transcript	60 Minute Interview	$60.00
Chris Boshuizen Interview Transcript	60 Minute Interview	$60.00
James Dougherty Interview Transcript	60 Minute Interview	$60.00
Tom Atchinson Interview Transcript	60 Minute Interview	$60.00
Reka Kovacs Interview Transcript	60 Minute Interview	$60.00
Zac Manchester Interview Transcript	60 Minute Interview	$60.00
Michael Doornbos Interview Transcript	60 Minute Interview	$60.00
Tim DeBenedictis Interview Transcript	60 Minute Interview	$60.00
Michael J Listner Interview Transcript	60 Minute Interview	$60.00
Jon Goff Interview Transcript	60 Minute Interview	$60.00
Scott Tibbits Interview Transcript	60 Minute Interview	$60.00
Ken Walczak Interview Transcript	60 Minute Interview	$60.00
Jason Dunn Interview Transcript	60 Minute Interview	$60.00
Ryan Butcher Interview Transcript	60 Minute Interview	$60.00
John Powell Interview Transcript	60 Minute Interview	$60.00
Darlene Damm Interview Transcript	60 Minute Interview	$60.00
TJ Patterson Interview Transcript	60 Minute Interview	$60.00
Robert Watzlavick Interview Transcript	60 Minute Interview	$60.00
Scott Fintel Interview Transcript	60 Minute Interview	$60.00
Robert Brand Interview Transcript	60 Minute Interview	$60.00
Richard Nakka Interview Transcript	60 Minute Interview	$60.00
Tim Bendel Interview Transcript	60 Minute Interview	$60.00
Tim Pickens Interview Transcript	60 Minute Interview	$60.00
Roland Coelho Interview Transcript	60 Minute Interview	$60.00
Freddy Pranajaya Interview Transcript	60 Minute Interview	$60.00
Chantel Cappelleti Interview Transcript	60 Minute Interview	$60.00
Abe Bonnema Interview Transcript	60 Minute Interview	$60.00
Jeffrey Manber Interview Transcript	60 Minute Interview	$60.00
Kris Kimel Interview Transcript	60 Minute Interview	$60.00
Jim Lumpp Interview Transcript	60 Minute Interview	$60.00
Pat Patterson Interview Transcript	60 Minute Interview	$60.00
David Klumpar Interview Transcript	60 Minute Interview	$60.00
Jamie Cutler Interview Transcript	60 Minute Interview	$60.00
Jordi Puig-Suari Interview Transcript	60 Minute Interview	$60.00
Ben Malphrus Interview Transcript	60 Minute Interview	$60.00
Paula Arvedson Interview Transcript	60 Minute Interview	$60.00
Mark Kanawati Interview Transcript	60 Minute Interview	$60.00

Mike Swartwout Interview Transcript	60 Minute Interview	$60.00
Glenn Lightsey Interview Transcript	60 Minute Interview	$60.00
Mark Campbell Interview Transcript	60 Minute Interview	$60.00
Chris Kitts Interview Transcript	60 Minute Interview	$60.00
Periklis Papadopoulos Interview Transcript	60 Minute Interview	$60.00
Werner G. Vavken Interview Transcript	60 Minute Interview	$60.00
Bobby Machinksi Interview Transcript	60 Minute Interview	$60.00
Don Edbert Interview Transcript	60 Minute Interview	$60.00
Garrett Jernigan Interview Transcript	60 Minute Interview	$60.00
Andrej Mosat Interview Transcript	60 Minute Interview	$60.00
Michael Carden Interview Transcript	60 Minute Interview	$60.00
HeatSyncLabs PongSat Project	Build and Launch a PongSat with JP Aerospace – includes hardware costs.	$150.00
Silicon Valley Space Center Support	PongSat Workshop	$1,500.00
Grammarly Proof Reading Service	Online Proofreading / Editing Service. $30/month	$120.00
Web Hosting	Website Hosting $25 / month	$100.00
BuzzStream Link Building Service	Online Link Tracking & Building Service. $29 / month	$116.00
SEOmoz (SEO Monitoring Service)	Online Search Engine Optimization Monitoring Tool. Allows us to track keyword results. $99 / month	$198.00
		$5,184.00

View online spreadsheet version: http://bit.ly/14CAWUR

9. Project Deliverables
All content will be posted online at http://diyspaceexploration.com/ and be made available free of charge. All content will be published under an open license allowing anyone to freely use and modify for their own purposes.

We have identified 5 key areas we will research during this project

1. General DIY Space education
2. Skills and Information necessary to build hardware
3. Cubesats
4. High Altitude Balloons
5. Amateur Rocketry

All published content will comply with ITAR.