

SkyCube

A satellite and a small business



What is **SkyCube**?

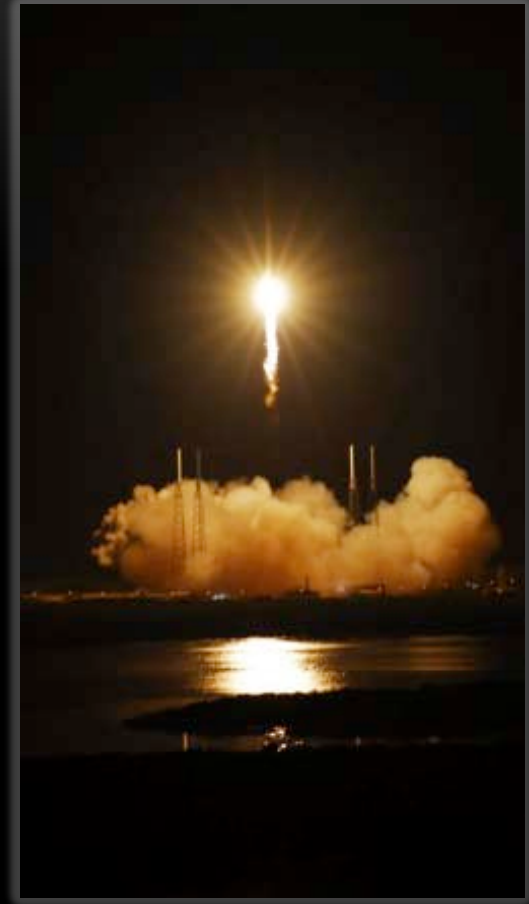
- 1U CubeSat launched on SpaceX Falcon 9 Q1 2013
- Mission: publicity, education, public outreach
- Takes low-resolution Earth images, broadcasts “tweets” from space
- Deploys 3-meter reflective balloon to make itself visible and end mission cleanly
- Funded by mobile apps, crowdsourcing, social media, corporate sponsorship



SkyCube: The Launch

- Launch from Cape Canaveral AFS Q1 2013
- Secondary Payload on SpaceX Falcon 9
- Circular orbit at 600 km altitude, 52° inclination
- Primary mission duration: 90 days
- Deliberately de-orbited at end of mission

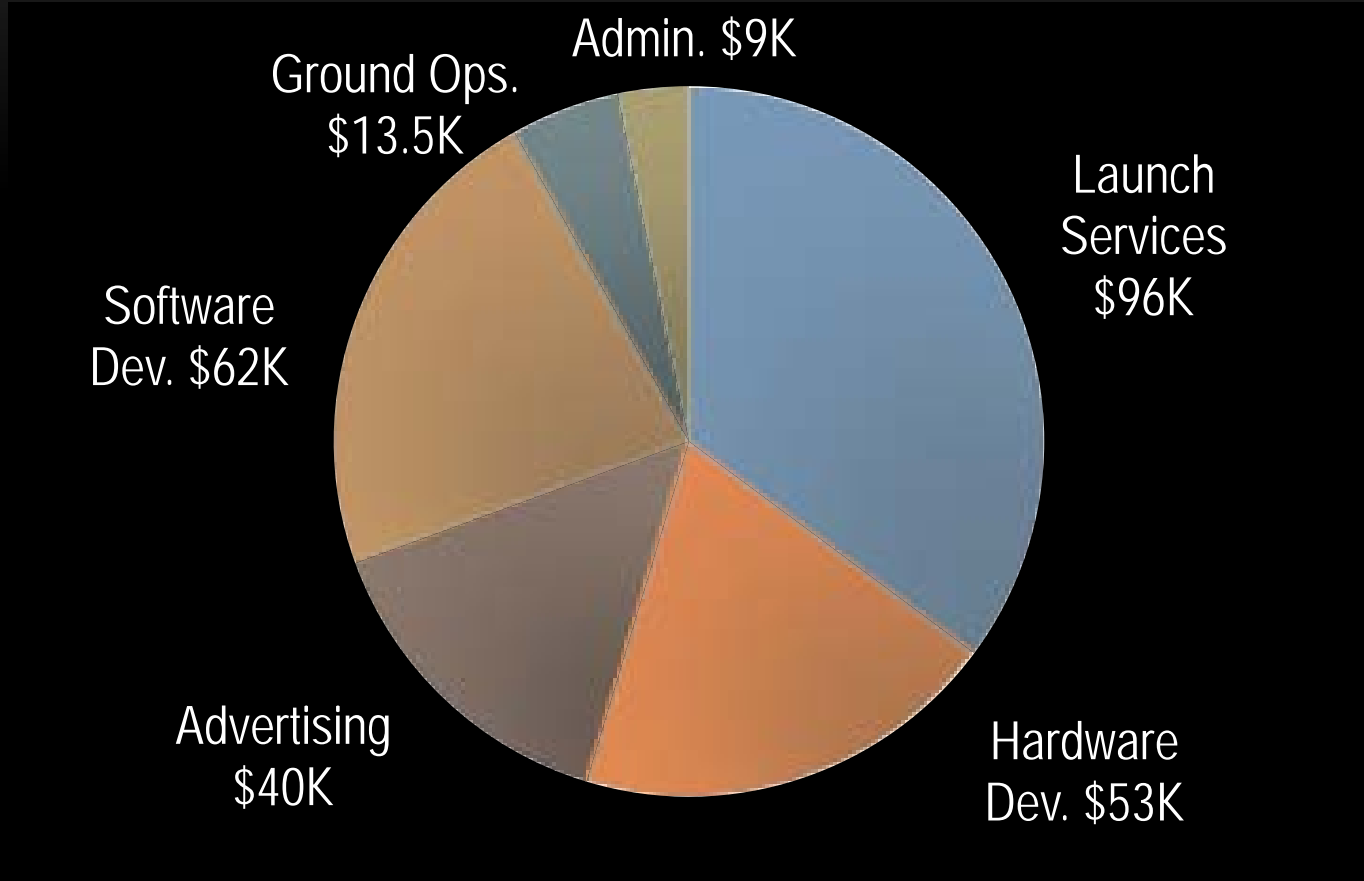
SPACEX



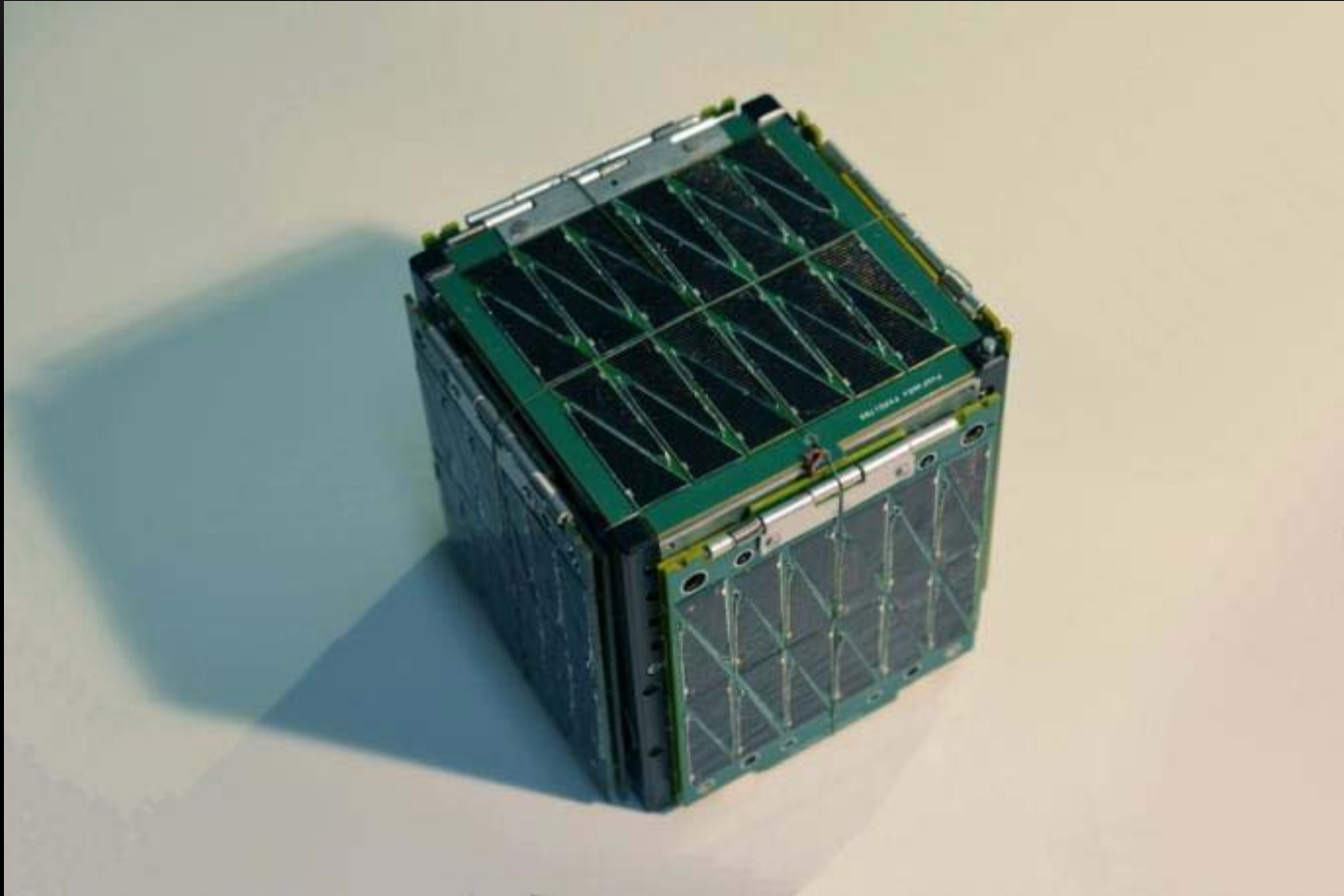
Cost & ROI

2012 - 2014

Program Cost Through Jan 2014: \$273K



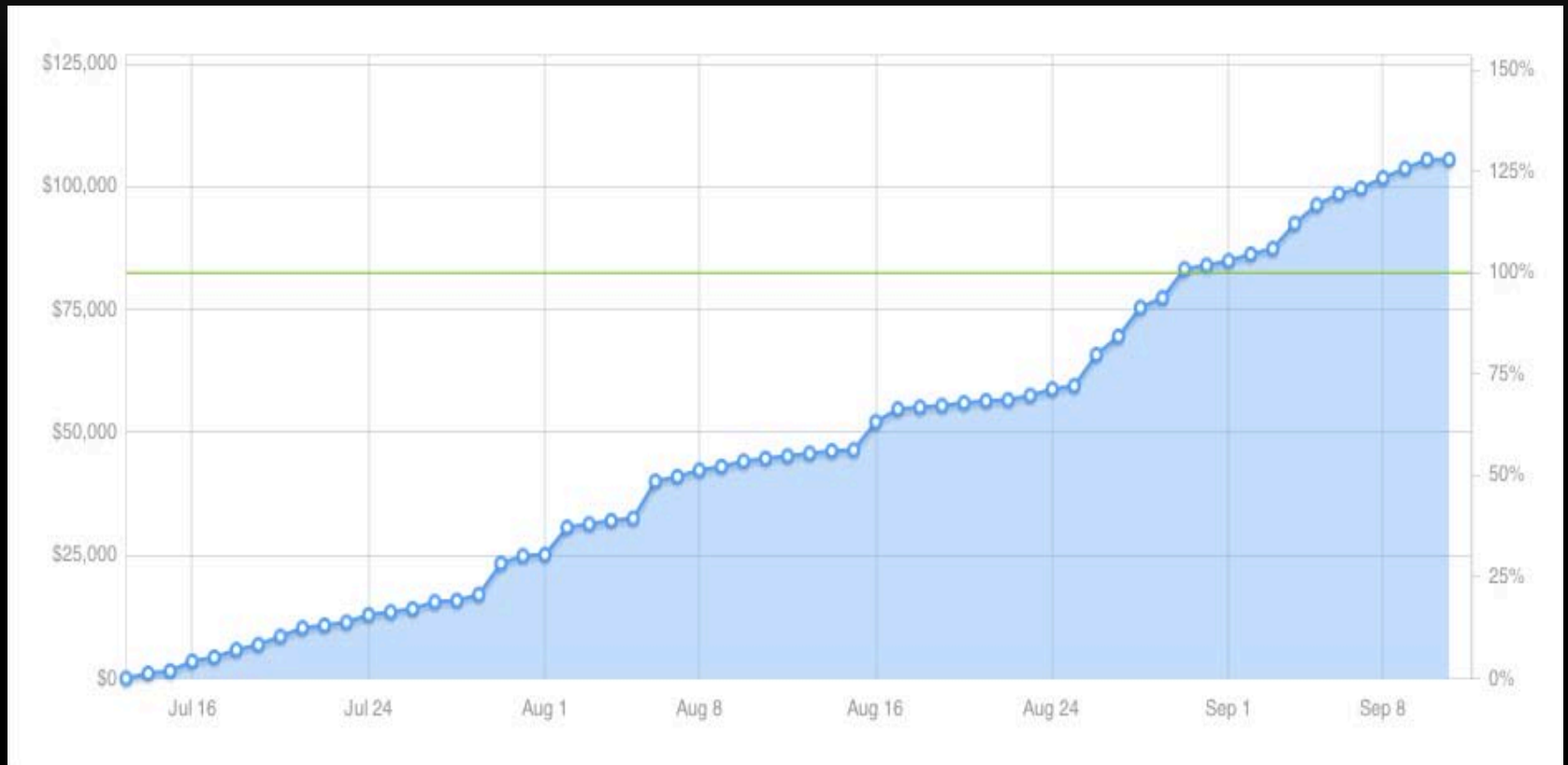
Hardware: COTS & Custom



Communication: US + Saber Astro



Successful SkyCube Kickstarter Raises \$117K, 12 Sep 2102



SkyCube: Fundraising Partners

- Coordinated with Southern Stars partners:
 - *MacTech* Magazine (\$25K sponsor)
 - Astronomical Society of the Pacific
 - NASA Night Sky Network
 - *Sky & Telescope* Magazine
 - Astronomers Without Borders
- Social Media (Twitter, Facebook, ...)
- Celebrity Endorsements (George Takei)

MACTECH



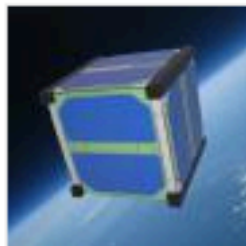


George Takei · 2,408,995 like this

14 hours ago · 🌐

👍 Like

With all of the excitement around Curiosity on Mars, I thought I'd let you know about the first CROWDFUNDED Satellite project I've heard of. For as little a dollar, you can help launch this SkyCube into orbit and even tweet from space. This fascinating and frankly very cool idea needs just \$50K more to happen. Nerds, unite! Let's do this.



SkyCube: The First Satellite Launched by You!

www.kickstarter.com

A nano-satellite that lets you take Earth images and "tweet" from space, then inflates a visible balloon, and de-orbits cleanly.

Like · Comment · Share

💬 1,335

👍 Thomas Hubbard, Richard Merrill, Bill Tschumy and 5,131 others like this.

💬 View previous comments

50 of 325

Space Crowdfunding Goes Big: June 2013

ARKYD: A Space Telescope for Everyone
by Planetary Resources · You're a backer

Home Updates 27 Backers 17,614 Comments 1,470 Seattle, WA Photography

Funded! This project was successfully funded on Jun 30, 2013.



17,614
backers
\$1,505,366
pledged of \$1,000,000 goal
0
seconds to go

Project by
Planetary Resources
Seattle, WA
[Contact me](#)

First created · 15 backed

Chris Lewicki 354 friends

Website: planetaryresources.com

[See full bio](#)

Share Tweet Embed

The first publicly accessible space telescope! Take amazing photos of space or have your photo displayed above the Earth.

The Future Arrives

2014

Launch: Antares/Cygnus Orb-1, 9 Jan 2014



Cygnus Arrives at ISS, 12 Jan 2014



ISS Deployment: 28 Feb 2014



Deployment, Cont'd: 28 Feb 2014



SkyCube De-Orbit Balloon: Full Size Model



SkyCube Reentry: The Grand Finale!



SkyCube Spinoffs

2014 - ???

Satellite Safari app



SeeDeR: Free SDR package for Windows

The screenshot displays the SeeDeR software interface, which is a free SDR package for Windows. The main window is titled "SeeDeR by Scott Cohen (C) 2014-2015 (GPL v3) [powered by SDR#]".

The interface is divided into several sections:

- Spectrum Analyzer:** Located at the top left, it shows a frequency spectrum plot. The current tuning frequency is 914,447 MHz, and the signal strength is -36.2 dB. The center frequency is 914,508,379 MHz. The x-axis ranges from 913,500 MHz to 915,500 MHz.
- Satellite Map:** Located at the bottom left, it shows a world map with satellite orbits and ground stations. The map is titled "Satellite Map".
- Control Panels:** Located on the right side, they include:
 - Frequency:** Tuning frequency: 914,447,264; Center frequency: 914,508,379.
 - Audio Out:** Volume (20%): [slider].
 - Device Settings:** Sample Rate: 2,057 MS/s; Gain: [slider]; Automatic Gain Control.
 - Demodulation:** None, WFM, NFM, Paging, AX.25.
 - Bookmarks:** [list box].
 - Visualization:** Visualization Quality: Medium.
 - Record to File:** Save History... [slider]; 32 MB; Stream all data to disk; Output dir: [text box].

The bottom right corner of the interface shows a text window with the following content:

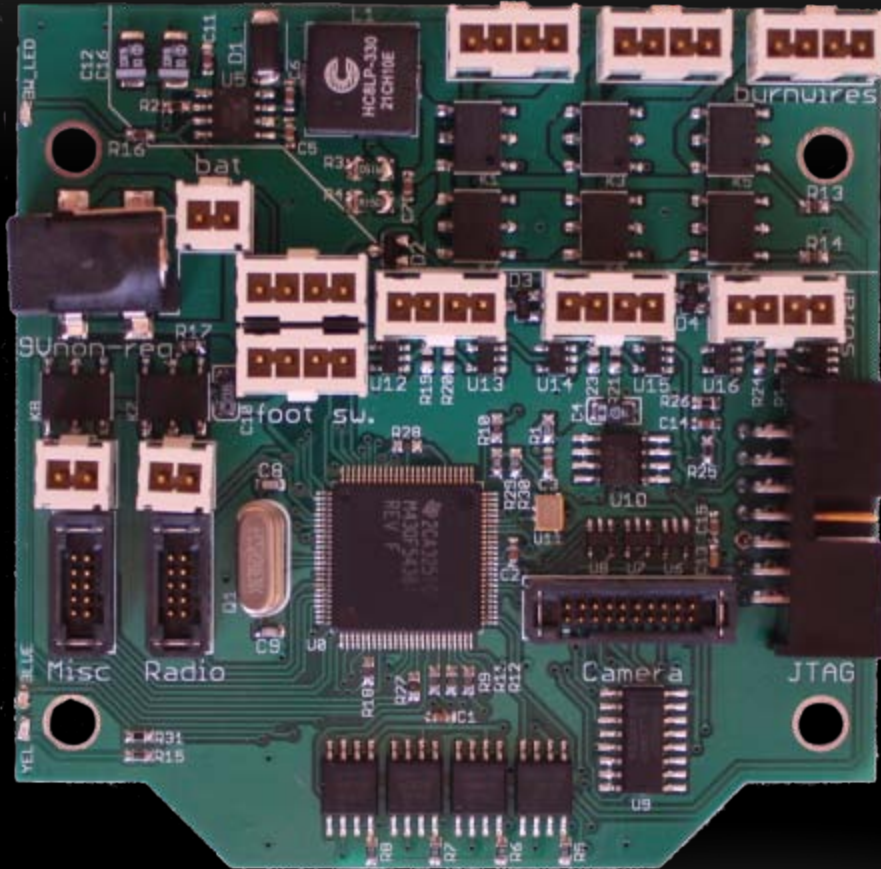
```
[5][21][20][20][54][69][6d][2c][20][52][6f][75][73]
e[64][20][74][68][65][20][72][65][73][74][20][6f]
b[20][42][65][78][74][2e][0a][31][34][2f][30][31]
p[3a][37][37][35][35][6d][56][20][53][50][3a][20]
0[20][32][6d][41][20][93][34][3e][20][20][31][6e]
be! Tim, Rouslan, Scott, Mark, Kevin, and the rest
2ah 54: 1aA 55: 1aA T: 15.9C---
```

Below the map, there is a text window showing the following information:

```
Upcoming pass 1: 12:20:18 from now
Start: lat= 20.42, lon=-135.55, t=2014/03/07 15:20:48 UTC
End: lat= 46.02, lon= -98.34, t=2014/03/07 15:31:34 UTC

Upcoming pass 2: 12:28:18 from now
Start: lat= 03.32, lon=-180.17, t=2014/03/07 15:28:08 UTC
End: lat= 03.33, lon=-180.17, t=2014/03/07 17:07:56 UTC
```

Unity: SkyCube Flight Mainboard



- Original development
- Combines 4 PCBs into 1
- Combines CDH and EPS
- Single MSP430 @ 20 MHz
- 16 MB flash
- 6 solar inputs, 6 – 18 V
- 6 constant-amp. outputs
- 5 TTL RS-232 ports
- Full-size JTAG connector
- DC power input
- 4 RBF/inhibit inputs
- Reprogram, recharge
CubeSat w/o reassembly
- **INCLUDES SOFTWARE!**

The Team

- Scott Culter
- Rouslan Dimitrov
- Mark Caviezel
- Kevin Brown
- Chris Phoenix

