

S P A C E V R

13th Annual CubeSat Developers Workshop
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Introduction

- Problem
- Solution
- Content
- VR Industry
- Business Model
- Engineering Results



Problem

Space is out of reach.

\$1.7 Billion per Month

\$4 Million per Month

\$2.99 per Month + \$10K option

Solution

Overview One

3U+ CubeSat

8448 x 3156

X-Band Tx

S-Band Rx/Tx

TK1 CPU/GPU

15.3 W

120 Wh

Patch Antennas

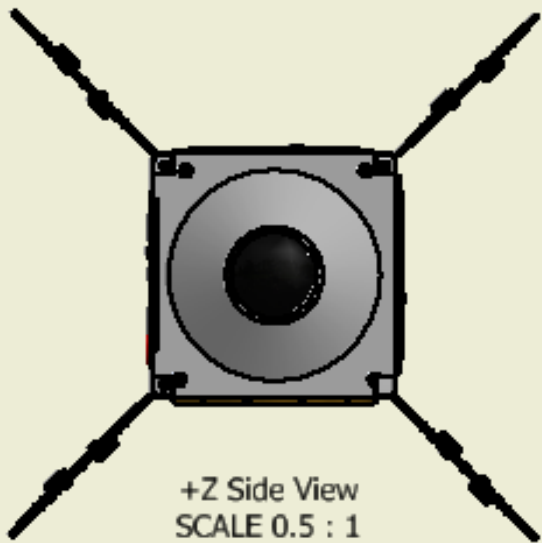
0.007° Star Tracker ADCS



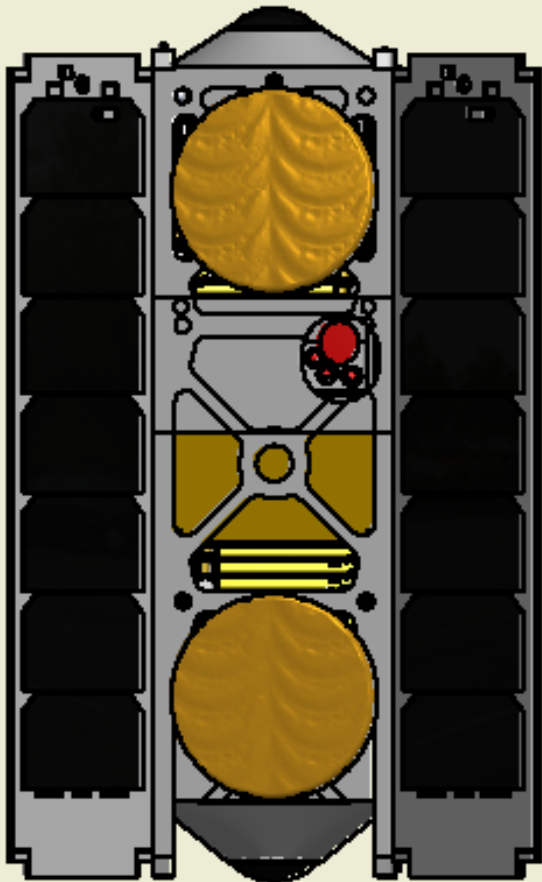
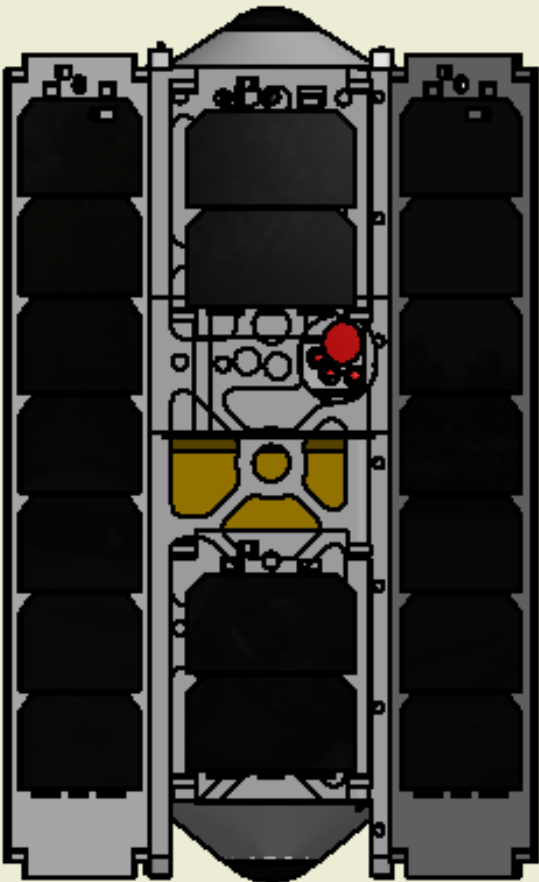
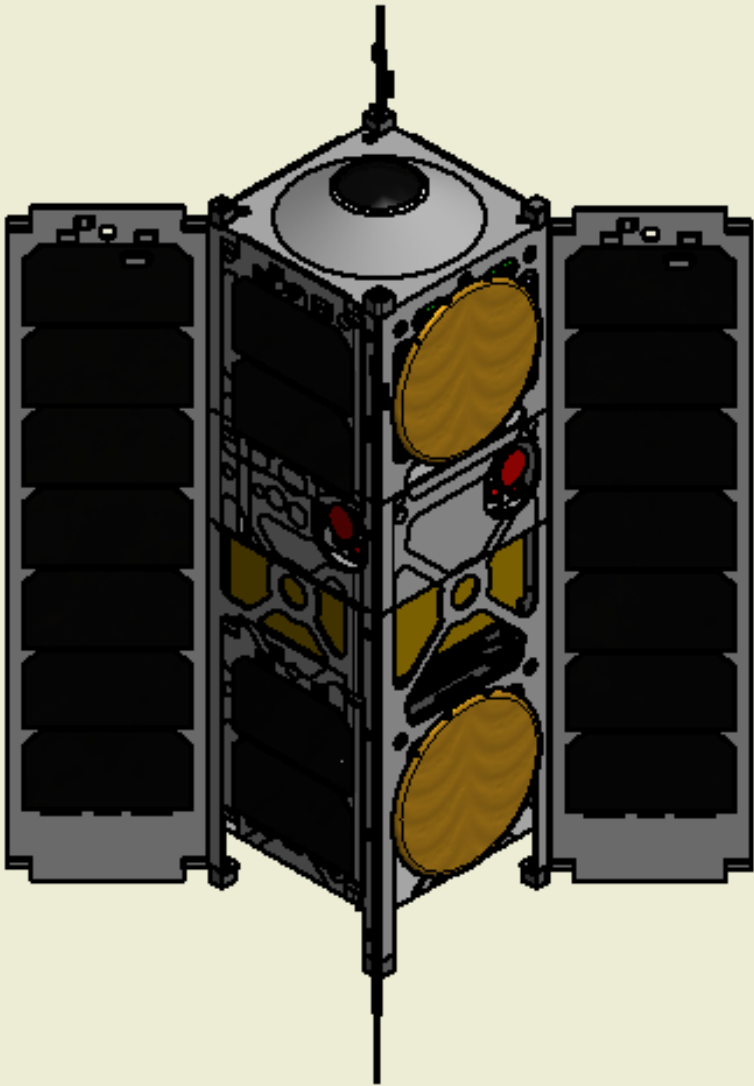
EDGE MOUNTED DEPLOYABLE SOLAR CELLS

9.8 dB Downlink Margin
24 dB Uplink Margin
ISS Deployment
3U+ Volume

I hate solar cells



CubeSat Right Hand Reference Frame:
↑ +Z-Axis
↙ +X-Axis
↘ +Y-Axis



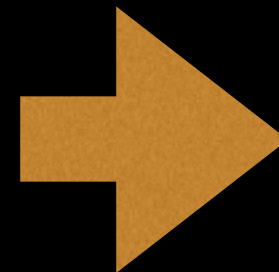
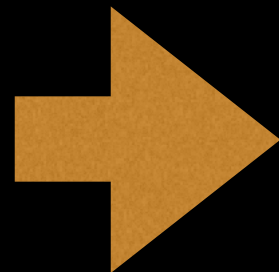
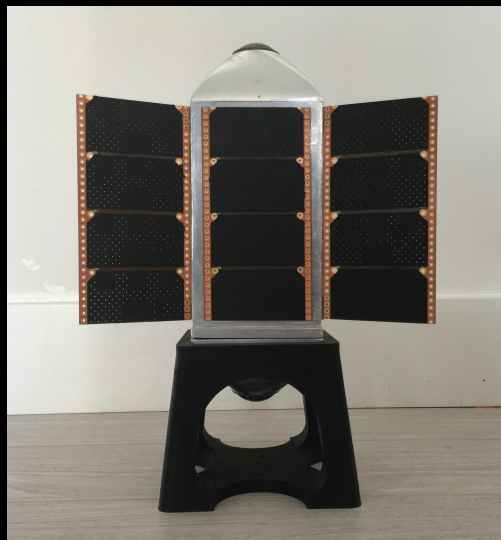
DRAWN B. Sanders	3/1/2016	SpaceVR		
CHECKED		TITLE		
QA		Concept of Operations (CONOPS)		
MFG		SIZE C	DWG NO Overview One Mark VIII	REV VIII
APPROVED		SCALE	SHEET 1 OF 4	

Content

100

unique experiences
at 400 m per pixel resolution

VR Industry and Distribution



Virtual Reality
Active Users

Today
200,000

2018
180,000,000

Business Model

Virtual Reality Space Content

Consumer	Enterprise	Licensing
Mobile & Web	Schools, Museums, Companies	Research, News, Games
\$29.99/year or \$2.99/month	\$1,000 - \$10,000 /month (User Based)	\$500,000+ (Single Time)
1300 Users Already	50 Schools + 2 Museums interested	TOP SECRET

Engineering Results



360 degree stitch of SF Bay Bridge

No tripods in space...

Engineering Results



360 degree stitch @ 18.2 km / 60K feet

www.vrideo.com/spacevr

Pass Prediction

Elevation Mask	Usingen, DE	Brisbane, AU	Brewster, WA (USA)	Fairbanks, AK (USA)	Southland, NZ	TOTAL COVERAG E
10°	29.4	17.6	30.5	0.0	32.8	110.3
20°	15.8	7.4	16.7	0.0	17.8	57.6
30°	9.4	3.4	9.9	0.0	9.7	32.4
40°	5.9	1.7	5.6	0.0	4.3	17.6
50°	3.7	0.9	2.5	0.0	2.2	9.3
60°	2.2	0.5	1.2	0.0	1.0	4.8

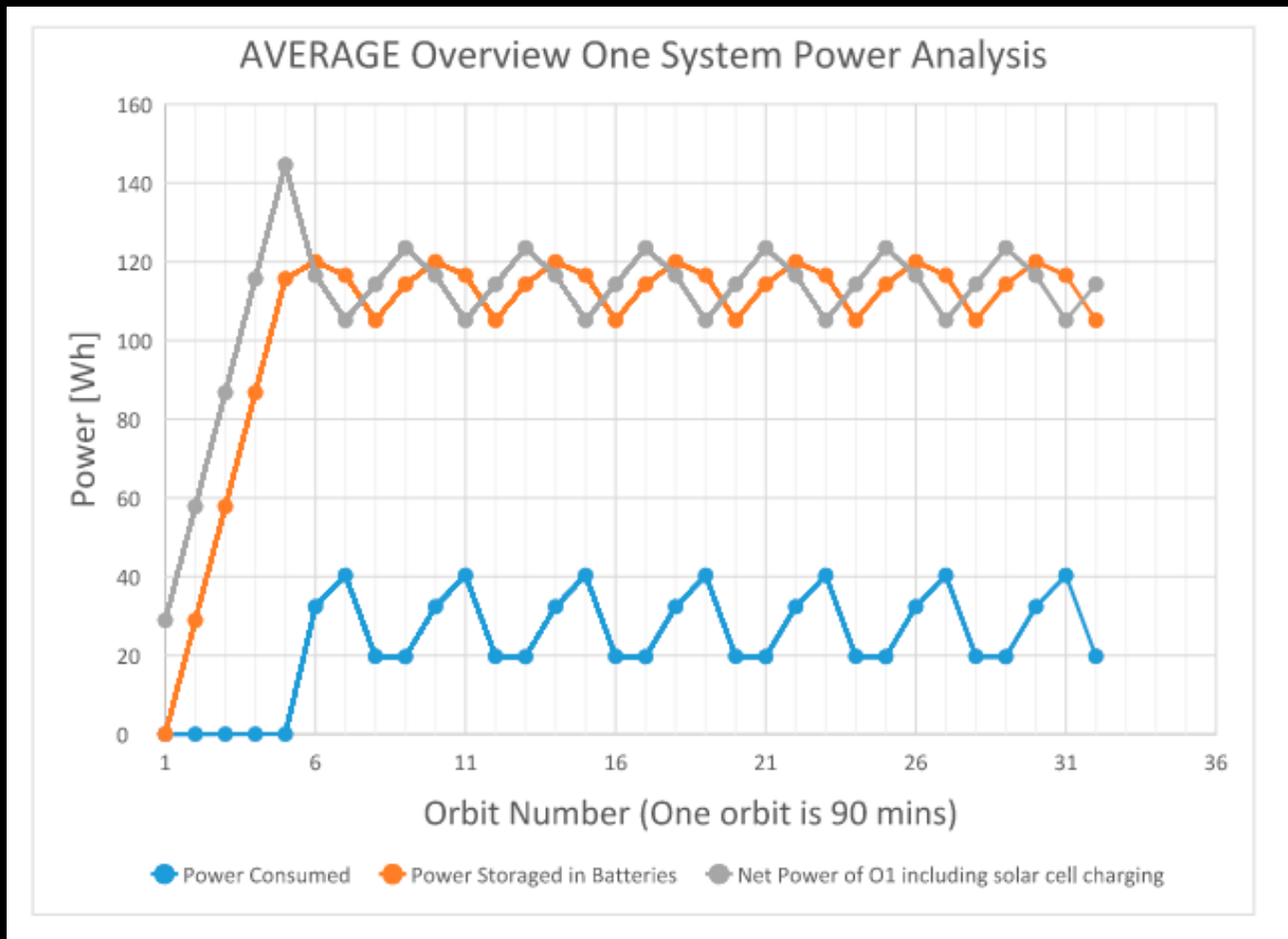
Table 1 - 30 day downlink time

4.66 GB of content per day

10 to 100 MBits/Second

Live VR not possible yet...

Power Analysis



5 Modes of Operation:

- Camera Mode (Video)
- Transmit Mode (X-Band)
- Scouting Mode (Stills)
- Free Fly Recharge Mode
- Recovery Mode (4.5 hrs)

Instantaneous Power:

- 37 W - X-Band Radio (4% Duty Cycle) via 5A @ 7.4V
- 7 W - K1 CPU/GPU (100% Duty Cycle) via 0.6A @ 12V
- 5 W - Two 4K cameras (3% Duty Cycle) via 1A @ 5V
- 4 W - Attitude Determine & Control System (50% Duty Cycle)

WE ARE HIRING

Linux Embedded Software Engineer

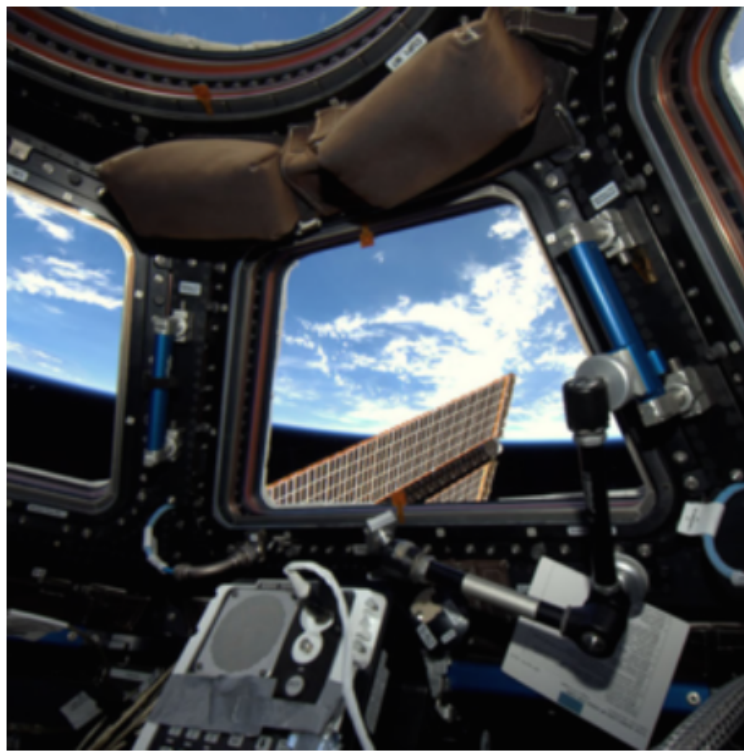
Experienced Systems Engineer

**DEAR
TMRW.
BRING
IT ON...**

PRE-ORDER TODAY

Join our community of 1300 VRnauts

www.spacevr-step-into-space.backerkit.com/hosted_preorders



Earth VR Experience

Experience the world's first virtual reality footage taken in space! See the earth pass underneath... [more »](#)

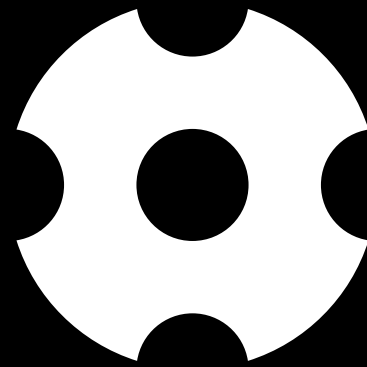
\$25.00



SPACE DODOCASE VR VIEWER!

Compatible with smartphones less than 7.0" diagonal (iPhone 6+ or Samsung Galaxy S III and smaller).

\$30.00



S P A C E V R

The future of space exploration is virtual reality.

www.spacevr.co

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