

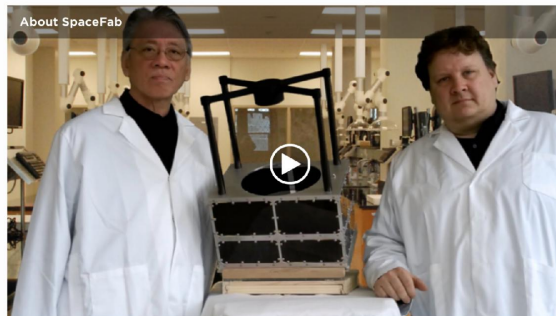


Commercial space telescopes

We are designing and building the first commercial space telescope for astronomy and Earth observation. This satellite will generate significant revenue as soon as it is launched, addressing both the astronomical and Earth observation markets. We plan to build and launch many more satellites for these markets as well as other markets.



Randall Chung
CEO/Co-Founder



Why you may want to invest

- 1 We have designed an advanced space telescope system that is immediately commercially viable and can be the first in a constellation of space telescopes for astronomy and high-resolution Earth observation.
- 2 We have patent pending technology for an ion engine accelerator that multiplies ion engine thrust and efficiency.
- 3 We're working with corporate partners to design and build critical optical and mechanical components. We also have an agreement with a corporate partner to provide the launch of our first space telescope satellite in 2019.
- 4 We have established a relationship with a major university partner for a funding program which should result in enough customers to reach full telescope time capacity of our first satellite.

Our Ambition

We want to be the largest provider of on-demand space telescope services so that everyone can afford access to powerful multi-purpose space telescopes for personal, educational, and commercial use. We will leverage our space telescope technologies to extend into asteroid mining and exponential space manufacturing. Exponential space manufacturing may make it less expensive to manufacture in space than to manufacture on the Earth, revolutionizing how we build and what we build for space.

[SpaceFab.US_busplan_2017Aug17_Wefunder.pdf](#)

Follow (236)

space astronomy telescope mining
manufacturing spacex rocket orbit
tech aerospace hardware aerospace

Why I Like SpaceFab

When I first understood SpaceFab's business plan and vision, I was very excited. SpaceFab has a grand long term vision to accelerate construction in space by way of exponential manufacturing. Randy and Sean have a step by step plan to develop the necessary technologies. The space telescope will validate an integral part of the long term business plan and demonstrate its financial viability. I was so impressed that I became an early investor to support the launch of their first satellite.

Yen Choi

CO-FOUNDER AND BOARD MEMBER OF FIBERSAT, A SATELLITE OPERATOR.

THE BUZZ ABOUT SPACEFAB

I started Houghton & Company and Houghton Capital Corporation after being with Morgan Guaranty Trust Company (now Morgan Chase Bank) and White Weld & Company. I have had my successes and witnessed failures during my long career, both as a capital raiser and as CEO of companies, including Cotton Petroleum Corporation, Hadson Corporation, Casella Waste Systems and Hadson Energy Resources Corporation. I have invested in SpaceFab.US because of the track record of the management team and the outlined business plan, and I believe the future will be in space and space technology. Lastly, because I believe an investment at this time in SpaceFab.US will multiply my investment many times over in the next two to four years.



Stephen W. Houghton

CEO/Founder, Cerro Grande Mining Corporation



SpaceFab: A Space Telescope for Everyone

Visit <https://www.optcorp.com/> for all of your astronomy product and knowledge needs. OPT is collaborating with SpaceFab on their new satellite-mounted telescope that will be accessible to everyone. Watch this video to learn more. SpaceFab's
December 26, 2017 @ youtube.com



Spacefab bootstrapping higher resolution space telescopes and then manufacturing in space at asteroids | NextBigFuture.com

Spacefab is currently building their Waypoint space telescope with a 21 centimeter mirror. It is launching as a co-payload on a SpaceX rocket in 2019. This commercial telescope will have an image intensified ultraviolet and visible camera, and a 48
November 16, 2017 @ nextbigfuture.com



Waypoint 1

Gunter's Space Page - Information on Launch vehicles, Satellites, Space Shuttle and Astronautics
November 16, 2017 @ space.skyrocket.de



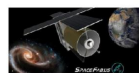
Tue, 11/14/2017 - 19:00 | Dr. David Livingston

Guest: Dr. David Livingston; Topics: This was supposed to be a program for those who self-invite themselves as a guest on The Space Show. No such callers called. We talked space telescopes re SpaceFab. Please direct all comments and questions
November 16, 2017 @ thespaceshow.com



Robotic Asteroid Mining: Bootstrapping the Solar System Economy

Centauri Dreams returns with an essay by long-time contributor Alex Tolley. If we need to grow a much bigger economy to make starships possible one day, the best way to proceed should be through building an infrastructure starting in the inner
October 20, 2017 @ centauri-dreams.org



SpaceFab Plans Public Use Commercial Space Telescope

ORANGE COUNTY, California (SpaceFab PR) - SpaceFab.US is a new space startup company working on space telescope satellites, asteroid mining, and space manufacturing. The company, also known as SpaceFab, is designing and building its
October 16, 2017 @ paraboliarc.com



Sun, 09/10/2017 - 12:00 | Dr. David Livingston

Listen to Randy talk about SpaceFab from 21min to 46 min. Guest: Open Lines with Dr. David Livingston; Topics: We discussed a variety of space and related topics ranging from equity crowd funding, commercial space telescopes, Moonwards, lunar September 13, 2017 @ thespaceshow.com



DIY Spaceflight | Big Picture Science

The Big Picture Science radio show and podcast engages the public with modern science research through lively and intelligent storytelling. Hear about SpaceFab at 19:10 minutes in. February 2, 2017 @ bigpicturescience.org

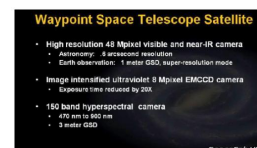
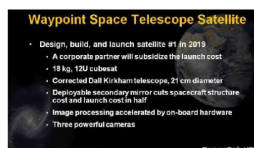
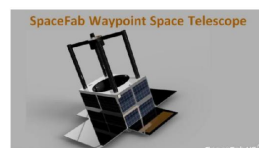
Space Telescope Business

We are designing and building the first commercial space telescope. This satellite will generate significant revenue as soon as it is launched, addressing both the astronomical and Earth observation markets. We plan to build and launch many more satellites for these markets as well as other markets. We want to be the largest provider of on-demand space telescope services, so that everyone can afford access to powerful multi-purpose space telescopes for personal, educational, and commercial use.



Waypoint Space Telescope

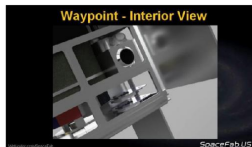
The Waypoint space telescope satellite is an advanced space telescope that will be commercially viable even from the first satellite launched into orbit. We have corporate partners working with us to design and build critical optical and mechanical components, and have an agreement with a corporate partner to provide the launch of our first space telescope satellite in 2019. We have established a relationship with a major university partner for a funding program which should result in enough customers to reach full telescope time capacity of our first satellite.



Size (kg)	Mass	Orbit Inclination	Minor Axis	Ground Resolution
SpaceFab Geost	100kg	Lowest	27 km	1m
Black Box / DCOUT	55kg	37W	25 km	1m
Beijing-1	160kg	580W	31 km	4m
Razakal	160kg	570W	20 km	2.5m

- Subscription – access to all high resolution public data
- **Earth observation imagery**
 - Free low resolution
 - Archived and tasked imagery on demand
 - High resolution 1 meter GSD

- Future very high resolution optical satellite
 - 30 cm GSD, super-resolution mode
 - Deployable secondary mirror cuts weight, size, and cost by an order of magnitude
 - Each satellite can be launched by a \$10M launcher



Asteroid Mining

We will leverage our space telescope technologies to extend into asteroid mining and exponential space manufacturing businesses. Pushing the frontier has always led to prosperity and new innovations. Our asteroid mining plan is much different from other asteroid mining companies who plan to mine water. Rather than water, we are focused on mining metal. An entire manufacturing industry, leading up to Exponential Space Manufacturing, can be constructed in space using asteroid metal. The first mission in our exponential space manufacturing plan is to send a satellite to a metal asteroid, mine and refine metal at the asteroid, and return material back to Earth. We believe that the returned material could be valuable enough to pay for the cost of the mission.

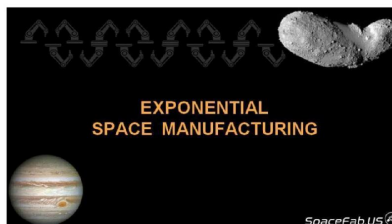


- ## Space Manufacturing Business Line
- Asteroid Mining and Exponential Space Manufacturing
 - Build on technology from Space Telescope business
 - Robotic processing of metal asteroids into bulk metals
 - Make and assemble metal tooling and machinery using 3D printing and CNC machine tools
 - Exponential growth in manufacturing capacity
 - Provide in-space manufacturing as a service

- ## Exponential Reduction In Costs
- Fully automated in-space manufacturing will drive most costs down to zero
 - raw material and real estate cost zero
 - Continuous reduction in costs of labor, energy, equipment, and transportation means fabrication costs will approach zero
 - Large billion dollar structures such as power beaming satellites or large space stations will become affordable
- SpaceFab

Space Manufacturing

Our exponential space manufacturing business line will be built on the foundation of the technology we use for our space telescope satellites. We will be developing the technology to collect, process, and refine the asteroid metal. In a future mission, we will send a satellite with machine tools such as a metal 3D printer, a CNC (computer numerically controlled) machine, and an electron beam welder to make parts that can be used to make more machine tools. Exponential space manufacturing will make it less expensive to manufacture in space than to manufacture on the Earth, revolutionizing how we build and what we build for use in space.



- 
- ## Exponential Manufacturing In Space
- Metal from asteroids will be used to make parts and machinery
 - 3D printing, machine tools, and robots can be used to make more and more complex machines from simpler parts
 - Exponential growth cycle
 - Design a machine tool center to duplicate itself in six months
 - Hard to manufacture parts need to be shipped from Earth, but fewer and fewer with each manufacturing cycle
 - Manufacturing capacity grows one thousand fold in five years
- SpaceFabUS



Use open source software to control and simulate manufacturing robots

- ROS (Robot Operating System) – robot application libraries
- Gazebo – simulate multiple robots and environment
- OpenCV – computer vision library

No need for teleoperation. Develop and test fabrication apps virtually on Earth, then execute in space

- Same model as cloud computing, migrated to space manufacturing environment

Science has caught up with science fiction

www.comSpaceFab **SpaceFab.US**

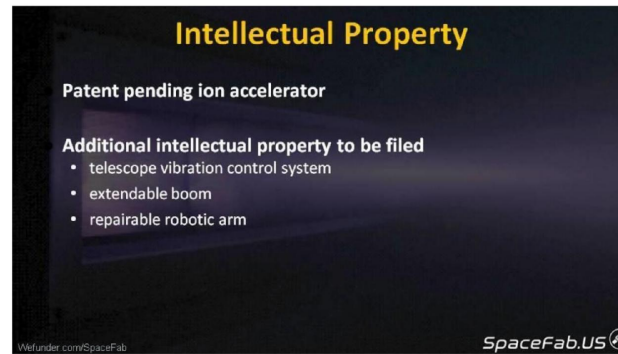


- Space manufacturing will drive most costs down to zero**
 - Raw material and real estate cost: zero
 - Continuous reduction in costs of labor, energy, equipment, and transportation means fabrication costs will approach zero
- Exponential reduction in costs means it will cost less to manufacture objects in space than to manufacture them on Earth**
- Large billion dollar structures such as power beaming satellites or large space stations will become affordable**

www.comSpaceFab **SpaceFab.US**

Intellectual Property

The closest known metal asteroid requires about double the energy needed to go to the nearest non-metallic asteroid, so we plan to use our super high efficiency ion engine accelerator for propelling our satellite. We will also be filing patents on the extendable secondary mirror for our space telescopes.



Intellectual Property

Patent pending ion accelerator

Additional intellectual property to be filed

- telescope vibration control system
- extendable boom
- repairable robotic arm

Wefunder.com/SpaceFab **SpaceFab.US**

About Us

The CEO and a co-founder of SpaceFab.US is Randy Chung. He graduated from University of California at Berkeley with a bachelor's degree in EECS (electrical engineering and computer science). His first job was at Hughes Aircraft's Space and Communications Group, working on Spacecraft Telemetry and Control. He then worked on digital signal processor integrated circuits at Hughes' Radar Systems Group. He continued working on integrated circuits at Western Digital, where, as a solo design engineer, developed the world's first single chip hard disk controller. This chip was designed into the IBM PC-AT, and Western Digital quickly grew to a billion dollar company based on this very successful product. Our spacecraft engineering director and also a co-founder of SpaceFab.US, is Sean League. He is an astrophysicist, an optical networking engineer, and is experienced in observatory and telescope sales and design. He has worked at nLight on anti-missile laser systems, and at MCI Worldcom and Nortel on optical networking.



Who We Are

Randy Chung, Co-founder, CEO and Chairman of the Board

- Founder of Edgeteam, Inc., Internet streaming video delivery
- CTO for 15 years, system and software
- System and integrated circuit electrical engineer, total of 25 years
 - Satellite engineering, radar signal processing at Hughes Aircraft
- Developed a billion dollar product, world's first single chip hard disk controller at Western Digital, used in IBM PC-AT
- Developed CMOS image integrated circuit products at Rockwell Semiconductor and Conexant

www.comSpaceFab **SpaceFab.US**



Who We Are

Sean League, Co-founder & Spacecraft Engineering Director

- Experienced company founder of US Telescopes, Inc.
- Astronomy, optical networking engineer, observatory and telescope sales and design
- VP Sales and Marketing Director at Daystar Filters
- nLight Inc. (anti-missile lasers), MCI Worldcom, Nortel

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Partners

Dr. Robert Chung, Member of SpaceFab.US Board of Directors

- Visiting Professor at University of California at Berkeley, experienced in cosmology and statistical analysis

Yan Choi, Member of SpaceFab.US Board of Advisors

- Co-founder and later, Member of observatory, a satellite operator, Co-Founder and Board Member of Human-Machine, a San Antonio Network Services Provider

Richard Hedrick, Member of SpaceFab.US Board of Advisors

- President and CEO of Nanitech Instruments, manufacturer of observatory class astronomical telescopes

www.comSpaceFab **SpaceFab.US**

Our Journey So Far

We are making great progress in identifying our target market, talking to

potential customers, working with corporate and university partners, and designing our Waypoint space telescope. We've partnered with Fibersat, which will be launching a large communication satellite, and with Planewave, a top builder of observatory grade telescopes.



Letter from Randy Chung to Potential Investors

August 17, 2017

My first job after graduating from college was working on a communications satellite, but I spent most of my career designing computer chips. Throughout my career, I've seen the changes in the electronics and semiconductor industries, starting with the advent of six transistor radios from Sony, on to computer processor chips from Intel, and now smartphones from Apple. The innovation has been amazing. Transistors started out costing five dollars each, and now you can buy an Arduino computer board with 5 billion transistors for the same five dollars. The exponential growth in processing power along with the exponential reduction in electronics cost has revolutionized our lives. In space technology, we are at a point similar to that of the six transistor radio. We've come a long way, yet we can go much farther, much faster.

Let's talk about building things for space. The industry currently doesn't manufacture anything in space. Instead, we manufacture on the ground and then launch into space. That greatly limits what we can build, because everything has to fit on top of a rocket. When we look at the International Space Station, it's a Tetris puzzle of rocket pieces. Once we are able to manufacture in space, we can start building structures as large or larger than the International Space Station. This opens the realm to construction projects such as power satellites and habitats for astronauts.

At Spacefab.US, our long term plan is to build tools which can make bigger tools and progressively build machinery for factories to make finished goods useful in space. Our asteroid mining and manufacturing approach is to focus on metal asteroids, because metal is necessary to build an industrial base in space.

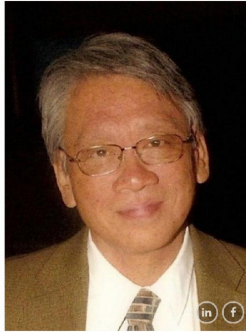
The raw metal at a metal asteroid is essentially free, and can be used with a minimum amount of refining to make all kinds of manufacturing tooling. As space manufacturing capacity grows exponentially, the cost of space manufacturing will go down exponentially, just as it has happened with the semiconductor industry. The exponential cost reduction over time means that it will be less expensive to manufacture most things in space than to manufacture them on Earth.

The first step in implementing our big audacious goal is with a space telescope satellite business, because all the technologies we use for space telescopes can also be used for our space manufacturing satellites. This allows us to develop and refine our technology while bringing in revenue. All investors will receive time on our space telescope satellite to take beautiful pictures of the Earth or stars and galaxies. This time can be for yourself or the time can be donated to your favorite school. When we are excited by a scalable idea, we often say "the sky's the limit".

We have taken this to the next level and live by "the sky is unlimited!" We are calling on space enthusiasts around the world to invest in the future of SpaceFab.US, to invest in an exciting future for all mankind.

- Randy Chung

Meet the Founders



Randall Chung
CEO/Co-Founder



Sean League
Spacecraft Design/Co-Founder

AND THE REST OF THE TEAM



Richard Hedrick
SpaceFab Advisor,
Planewave Instruments
CEO



Yen Choi
SpaceFab Advisor,
Fibersat Co-founder

Raised **\$169,397** From **204** Investors

\$169,397

March 2018



Yen Choi
*Entrepreneur and investor Co-Founder / CTO -
Netcom Africa Co-Founder - Fibersat SA
Advisor - SpaceFab.us Advisor - Ignitia AB
Principal - 100 Groundnut*



George League
*Age 73, Retired telecom engineer, 30 years
IBM, 16 years Nortel.*



George League
*Age 73, Retired telecom engineer, 30 years
IBM, 16 years Nortel.*



Yen Choi
*Entrepreneur and investor Co-Founder / CTO -
Netcom Africa Co-Founder - Fibersat SA
Advisor - SpaceFab.us Advisor - Ignitia AB
Principal - 100 Groundnut*



Meng Zhang
*iGAGING Precision Measuring gauges and
instruments. Enjoy Accuracy! San Clemente,
CA 92673 USA*



Annabelle Esmene
I'm a registered nurse by profession.

Interview

WF: What makes you so excited about space mining, manufacturing, and space telescopes? ▾

We are excited about private space enterprise, rather than government programs. The conditions are ripe for private space businesses to be launched and to make a huge impact on the future, similar to the rise of the Internet, the personal computer, and the railroads in the 1800's. Space has practically unlimited resources, ready to be tapped.

— COLLAPSE ALL

WF: What are you building? ▾

We are currently building space telescopes and will offer our own commercial space telescope observation service.

WF: What's next, in terms of expansion? ▾

SF: We will be building larger, more sensitive, and higher resolution space telescopes. We will continue to design and build multi-purpose space telescopes that can be used by a wide range of customers in the astronomy, Earth observation, and government markets.

WF: Who are your competitors? ▾

- In asteroid mining, Planetary Resources and Deep Space Industries are working on mining water from asteroids. We are focusing on mining metal from asteroids, because that enables exponential manufacturing.
- In space manufacturing, Made in Space is working on 3D printing plastic objects in the International Space Station. We are focusing on robotic 3D printing and machining of metal objects and tools in space.
- In telescope observation services, Slooh.com, iTelescope provide paid ground telescope observation services to amateur astronomers. We will provide similar paid observation services using our space telescope satellites.
- In Earth observation, Digital Globe, Airbus, Planet Labs, and Planetary Resources have or are working on single purpose satellites for Earth observation. Our SpaceFab satellites will be dual purpose, used for both Earth observation and astronomical observation.

WF: Why are we different and better than the competition? ▾

- For astronomical telescopes, Slooh.com and iTelescope only provide ground based telescope observation. We will be the first service provider dedicated to astronomy with our own commercial space telescope satellites.
- For asteroid mining, we are concentrating on metal asteroids, while Deep Space Industries and Planetary Resources are concentrating on mining water. The enormous advantage of mining metal is that it enables exponential manufacturing, which will be a transformative multi-billion dollar market.
- For space manufacturing, Made in Space is concentrating on manufacturing using 3D printed plastic, which must be sent to space from the Earth. SpaceFab is concentrating on manufacturing using metal that's already in space, and using the metal to build an exponentially growing manufacturing service.
- In Earth observation, for the same size satellite, our telescope will cost half of much to launch because of our unfolding telescope design. This provides a lower cost, higher sensitivity, and higher resolution telescope than the competitors' satellites.

WF: Which segment of the market are you attacking? ▾

SF: We are starting out with attacking the astronomical observation market first, because it is not currently being addressed, and because it can be profitably addressed from our very first satellite. We also addressing the Earth observation market with the same space telescope, with high resolution and hyperspectral

cameras. We will address a double sized market, because our space telescope can observe the Earth in the daytime part of the orbit, and perform astronomical observation in the nighttime part of the orbit.

WF: What valuations have related companies been acquired for? ▾

In 2014, Google acquired the five year old company Skybox Imaging for \$500 million.

WF: How does your technology work? Why is it better? ▾

SF: Our unfolding telescope design allows us to build and launch much larger telescopes in a more compact spacecraft. We will have a 2:1 size advantage when launched. This lowers the launch cost, which can be the major cost for small satellites, and allows us to optimize the optical telescope design. We are also using optical communications to downlink the large amount of telescope image data, and we will use optical communications in the future for our deep space mining and manufacturing. Optical communications provides higher bitrates and longer range at a lower cost than radio communications.

WF: Who are your customers and how will you reach them? ▾

SF: Our initial market is to provide astronomical observation services to universities, professional astronomers, and amateur astronomers. We will provide services to the tens of thousands of amateur astronomers through our own website, and we will use social media, press coverage, and periodicals to reach the amateur astronomers. We are already working with a major university on a program funded by the National Science Foundation to provide U.S. colleges access to our space telescope.

WF: What are your other financing plans? ▾

SF: We will work on raising a Series A financing of \$2 million to \$3 million at the end of 2017 or early 2018. This will allow us to finish our first space telescope, through VC or other type of financing, and launch our satellite in 2019. We plan to reach profitability without needing to raise additional funding.



Ask a Question



Type your question here...

ASK QUESTION

Josue guevara

Feb 23 2018 ▾

I just want to congratulate you on your vision and ideas, It is people like yourselves that can have a great impact in breaking boundaries and venturing into a new domain of exploration.

ANSWER IGNORE

Craig Vom Lehn INVESTOR

Aug 13 ▾

Is there any overlap between your company and two others that are raising on WeFunder? Tesseract and Solstar Space Company

ANSWER IGNORE



Randall Chung CEO/Co-Founder FOUNDER

Aug 14 ▾

We do plan on adding propulsion on our next generation space telescope. It looks like Tesseract is currently only developing chemical propulsion, but we will need electric propulsion, so we won't be able to take advantage of their "green" propulsion.

Solstar's technology is based on Wi-Fi radio, and unfortunately we are not able to use that type of radio for our communications. The Globalstar satellite network is a better fit for us, along with our laser communications technology.

We do wish both of the companies "all the best"!

Craig Vom Lehn INVESTOR

Aug 13 ▾

How does the new "Space Force" US military branch affect our company? It calls for an acceleration of space technology. <https://seekingalpha.com/news/3381523-plans-laid-space-force>

ANSWER IGNORE



Randall Chung CEO/Co-Founder FOUNDER

Aug 14 ▾

It will take some time for Congress to determine how the Space Force will actually work. Here's a quote from a SpaceNews article: "If we get

(SpaceForce) in one year, it'll be unprecedented. It took nearly five years of debate in the Congress to stand up Special Operations Command."

Jennifer Zachey

Nov 25 ▾

Hey! I just recently joined wefunder and came across your company! If you guys hold a seeding round I'll love to invest! (Any chance you will hold another round 2019?)

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Nov 25 ▾

We don't have any current plans to have another Wefunder round. We will probably wait another 4 or 5 months before making a decision.

James Harbal

INVESTOR

Jun 29 ▾

How are things going?

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Jun 29 ▾

Things are going great, thanks for asking! Our first summer intern has been working for two weeks, and has already contributed a lot to the spacecraft mechanical and thermal design. We're looking forward to our second summer intern starting on Monday, July 2. We plan to write a more detailed update on July 4, so please be patient, a lot has been happening lately.

Mohamed Eldib

May 24 ▾

Any updates?

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

May 24 ▾

We will post an update today!

James Harbal

Mar 21 2018 ▾

How did the DARPA Conference go?

ANSWER IGNORE



Sean League Spacecraft Design/Co-Founder

FOUNDER

edited Mar 21 2018 ▾

Hi James,

It actually went very well. I gave a presentation on SpaceFab's Waypoint satellite and we received a lot of interest. We also received positive feedback on our spacecraft bus for upcoming projects.

Thank you,

Sean

Craig Vom Lehn

INVESTOR

Mar 20 2018 ▾

The fundraiser is ~\$20k short of it's goal with four days remaining. Do you expect to reach the \$150k goal?

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Mar 20 2018 ▾

We are having discussions with several people who may make an investment or increase their existing investment. If we can get their commitment by Friday, they will have additional time to send their investment to Wefunder. If we can get closer to the goal, other investors have told us they will increase their investment to fill the gap.

Matt Juszcak

INVESTOR

Mar 12 2018 ▾

When will the fundraising close? We recently heard "days left", but an exact date would be helpful. Thank you!

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Mar 12 2018 ▾

The campaign will end March 23. You can specify an investment amount on March 23, and Wefunder will allow a few days for the funds to reach them.

Yifan Wang

Feb 7 2018 ▾

Hello. This is a very exciting business. I'm just wondering about the terms - is this campaign a "Cap only, no discount" SAFE? Thank you!

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Feb 7 2018 ▾

Yes, we want to make the SAFE terms as simple as possible. You can see the details of the SAFE in the section "OTHER DISCLOSURES" which has the



Form C information.

Jonathan Meed

Feb 1 2018

I am very interested in investing. my big hesitation is partners and company size. There are only two of you listed as on the team and two advisors . Even a small 12u cube sat has a huge amount of work that needs to be done before it can be launched. With the success of the wefund round do you plan on expanding your team size or do you plan on contracting out most of the work?

ANSWER IGNORE



Randall Chung

CEO/Co-Founder

FOUNDER

Feb 2 2018

The funds raised in the Wefunder round will be for our seed round. We will use the seed round funds to do the satellite design work that will show its functionality. We have corporate partners who have already helped us in telescope design and machining of spacecraft parts, and we will continue working with them.

To make the most use of our funds, we will initially use consultants rather than permanent employees. We'll be making use of new open source flight software and low cost subscription based commercial software for mechanical, electrical, and thermal design and simulation. We have the technical background to do most of the foundational work ourselves.

As an additional source of funds, we are about to start a separate sales campaign to sell low cost "space selfies", which we think will appeal to a larger audience than crowdfund investors.

Our plan is to finish our spacecraft engineering model and use it to show substantial progress to future investors such as venture capital firms. Once we raise additional funds in a second round, we'll be able to hire permanent employees to finish the work on a flight model of the satellite.

Eddie Zelenick

Jan 25 2018

What will the minimum investment of \$100 do for someone?

ANSWER IGNORE



Randall Chung

CEO/Co-Founder

FOUNDER

Jan 25 2018

We appreciate all investors, large or small. We do offer observation time rewards to the larger investors.

Silvio Sandrone

Jan 14 2018

In which orbit will you position the first telescope? Will the successive ones be in the same orbit?

ANSWER IGNORE



Sean League

Spacecraft Design/Co-Founder

FOUNDER

Jan 14 2018

Hi Silvio,

We are looking at a 525-600km sun synchronous orbit. We have not determined the initial RAAN yet, but successive satellites will be the same altitude, but have different RAANs. We prefer that our first satellite has a RAAN that will allow it to come over the Southwest US at the same time every night, so we can download the laser comm data.

Sean

Nico Carver

Jan 12 2018

1. "six 1-year-exclusive space telescope images at no charge, up to one minute exposure each" By six 1-minute exposures, do you mean each filter one uses would take up one of the six exposures? For instance, if I used 3 narrowband filters on one object, that would count as 3 of my six exposures? 2. If you can share, what sensor are you using for the 48mpix imager, the KAF-50100? 3. Any idea about the cost to take an astronomical image if one doesn't invest? or will it be a subscription model where one has access to all the data?

ANSWER IGNORE



Sean League

Spacecraft Design/Co-Founder

FOUNDER

Jan 12 2018

Hi Nico,

It is measured by time. If you were to take three 20 second exposures, one in each band, with no movement of the telescope, that would count as 1 minute. If you take each band for 1 minute, then it would count as 3 minutes. The lowest cost imaging we will offer are 1 minute exposures using the 48Mp Cmosis chip. It will be \$25 per minute, where you tell us, through our app, the object and the filters you will need. We will then add your observation to our task list and take the data when it is most

convenient in relation to other observations. If you want to take data at a specific place and time or keep your data secret for 6 months to a year, then there will be extra charges. The UV EMCCD and the hyper-band spectral imager will have a different price structures.

We will have a subscription based database where we store all of the data taken with the spacecraft. The data will be attributed to the person or organization who takes it, and if not withheld for a fee, be available to all who subscribe. Subscriptions are projected to be about \$10 per month.

Thank you,

Sean

Craig Vom Lehn

Jan 11 2018 ▾

What is your ultimate exit strategy? Do you intend to be acquired or IPO?

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Jan 12 2018 ▾

We are open minded about the exit. Right now, we are concentrating on building a great product and service, and having lots of happy customers.

Sean McDonald

Jan 8 2018 ▾

I would like to invest but based on this I am not quite sure what I am actually getting for investing. Can you please clarify how and under what circumstances early private crowdfunding investors can possibly benefit? - "Purchasers will not become equity holders of the Company unless the Company receives a future round of financing great enough to trigger a conversion and the Company elects to convert the Securities. Purchasers will have no say in whether their securities are converted in any Equity Financing"

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

edited Jan 10 2018 ▾

Our intention has been to protect the small initial investor by using a SAFE, where the valuation would be set by a later round of investment, for instance by a venture capital round. If the later round is lower than the valuation cap of \$6 million, then the initial investor would get a larger number of shares, based on the lower valuation. And if the later round is higher than \$6 million, you would get shares based on \$6 million, rather than fewer shares based on the higher valuation. The section that you cite, from risk factor #10, has to do with the situation where we would never raise another round of investment. We do plan to raise another round of investment in order to build, launch, and operate our space telescope business. The SAFE concept was invented by the startup accelerator Y Combinator, and here is a link to why they came up with it:

<https://www.ycombinator.com/documents/>

Ming Saime

Dec 27 2017 ▾

What will be the propulsion system of the satellite? How long will the propulsion last? How are you planning to change the direction of the telescope? What are the wavelengths of the filters? Will it have a solar filter?

ANSWER IGNORE



Randall Chung CEO/Co-Founder

FOUNDER

Dec 27 2017 ▾

This satellite does not need a propulsion system. It will be put into an orbit where it should last four years. The telescope will be pointed using momentum wheels and torque coils that push against the Earth's magnetic field, which only requires electricity from the solar panels and batteries. For astronomy, there will be filters for hydrogen alpha, hydrogen beta, oxygen III, nitrogen II, sulfur II, UV 200nm-300nm, Sloan U G R I, and a grism. We will be analyzing the use of the hydrogen alpha filter for observing the sun, depending on hot the filter gets. For Earth observation, there will be IKONOS/GeoEye compatible BGRI filters.

Gregory Knekleian

Dec 27 2017 ▾

What is the planned field of view of your space telescope. If I get a single image, what is the size of that image for space images that I can expect, so I can spend some time deciding what targets I would want to shoot with exposures? I know one could take more than one exposure of a wider object and stitch them together, but I don't know that that would work if I was simply going to take a long exposure image (up to a minute) as a single image? Additionally is one exposure limited to one long exposure which kind of makes sense from your location or a subset of exposures stacked adding up to one minute for processing options? I guess this question would figure into how the mechanical shutter would work or how that would affect the possible life time of the use of the telescope as well as a mean time between failure should a mechanical shutter fail. Would you care to give information on this to a possibly investor or future

buyer of photos.

ANSWER IGNORE



Randall Chung CEO/Co-Founder **FOUNDER**

Dec 27 2017

For our 48 Mpixel imager, each pixel is .6 arc seconds, and the picture is about 8000 pixels by 6000 pixels, or about 1.3 degrees by 1 degree. For our image intensified EMCCD, each pixel is 0.7 arc seconds, and the picture is 2880 pixels by 2880 pixels, or about 0.6 degrees square. The EMCCD has a gain of about 20, which would shorten the exposure by a factor of 20 compared to the 48 Mpixel camera. We intend to provide an option to have multiple pictures of a mosaic taken sequentially. You can decide if you would prefer a single long exposure or multiple shorter exposures. We also plan to provide on-board image processing (maybe not right off the bat, though), especially for implementing algorithms like synthetic tracking. There won't be a mechanical shutter, but there will be an opaque filter that would be used for dark frames. We will be designing the filter carousel to operate for tens of thousands of movements, because our goal is to have the satellite operate for four years.

John Aguilar

Dec 26 2017

Do you maybe plan to use these satellite scopes to offer internet service sort of like halo fi as in low earth orbit, I see you have other plans for mining etc, which is great but exploring other ventures might be something to look into.

ANSWER IGNORE



Randall Chung CEO/Co-Founder **FOUNDER**

Dec 26 2017

Our first step is to build a low cost space telescope with great features and performance using our unique technologies. This should lead us to profitability with one or two satellites. We will use our technologies and our knowledge in space telescopes to move on to asteroid mining and space manufacturing in a very cost efficient manner. Although the communication satellite market is large, it is very capital intensive to address, and is dominated by very large companies spending hundreds of millions of dollars to build huge geosynchronous comm satellites or huge constellations of Low Earth Orbit satellites. The shortage of radio bandwidth, especially in the desirable lower frequencies, is also a very big barrier to entry. The space telescope business addressing both astronomy and Earth observation markets is still sizable, while requiring less capital than a communication satellite network. Of course, we are always on the lookout for a more promising path.

Craig Vom Lehn

Dec 7 2017

When do you expect to close this fundraise?

ANSWER IGNORE



Randall Chung CEO/Co-Founder **FOUNDER**

Dec 7 2017

The fundraise will close by the end of February.

MORE QUESTIONS



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