



BETTER FUTURES

Transcript - James Burk part 1 episode

00:00:00:00 - 00:00:32:03

Michael Laine

And today we're here with James Burk. He is the executive director of the Mars Society. We're going to talk a lot about that. We're going to talk about the conference that we just had a couple, week and a half ago down in Arizona. We're going to talk about what's new and what's next. Before we get into that, the program kind of unfolds where we get into a little bit of people's history and background, because I feel like that's often not known.

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Michael Laine

And rather than give everyone a dry, dull, you know, artificial bio that we create, that we that we read off with this new format, we're really trying to get into the people of the business as we're getting into the finance, capitalization and operations of space. So with that, we're going to jump in first with an introduction, a long introduction with him for about 10 minutes or so.

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Michael Laine

And then we're going to start getting into the core topics. This is not going to be a normal hour long program that we often do. We're really focused on we're going to try to get done in about 30 minutes, 40 minutes or so. All right. With that, I really great great to have our friend James Burke here.

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James Burk

Yeah. Good to be with you, Michael.

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Michael Laine

Thank you. Good. Good to see you. We just put in an awful lot of work down and the desert of Arizona. So before we. Before we get into that, let's go a little bit into your background. You know, you've been at this job for not quite officially a year now.

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Michael Laine

And unless you've been in the Mars society for the long haul, most people don't know who you are. So give us a little bit of background. You know, who are you? How did you get to the Mars? How did you become a martian? It's a little bit of background.

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James Burk

Yeah, absolutely. So the job that you're referring to is the executive director of the Mars Society. So I joined the Mars Society back when it got started, actually in 1998. I'm a founding member. I was the head of the Seattle chapter. And at that time I was a young man working at Microsoft as a technical project manager, and I did that for about 20 years and also did a lot of consulting the last ten years.

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James Burk

But I joined full time at the Mars Society about a year ago in December of last year after a process that happened because we got a very large donation from our Blue Origin's club for the future of \$1,000,000. And so that enabled the Mars Society to bring on a full time executive director for the first time. And I was

transcript



fortunate enough to be the candidate they picked.

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James Burk

And so I got started with space advocacy. When I was in my early days in my career, I had just graduated from college, just worked, started working at Microsoft as a college hire, and found out about the Mars Society. Also was involved with National Space Society at the time, and another another one called the Moon Society, which grew out of earlier.

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James Burk

A group called the Artemis Society and the Artemis Society was the one I actually heard about first. It was on the 1996. I was watching TV in my college apartment and it was my junior year in college. And so this Discovery Channel program came out with Gillian Anderson called Future Fantastic. And they talked about these lunar renegades that are going to settle the moon with the private sector funding it and that project.

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Michael Laine

What year would this be?

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James Burk

1996.

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James Burk

You. 96. All right.

00:04:06:12 - 00:04:24:20

Michael Laine

So that project didn't work out for them, for that group of people. But I went on and I met a lot of them, and I also for many years worked with the Moon Society up until last year, and that was one of the areas of just learning how to be a space advocate. For me, that really helped a lot.

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Michael Laine

But the Mars Society, you know, I've been involved since the beginning of their 25th year as an organization. We've had our conference every year. We also have our Utah station is our flagship project, the Mars Desert Research Station, which you can see behind me. It's an analog research station where people come in and spend two weeks and they practice living and working on Mars.

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Michael Laine

And it's a really important program. It's one that we are really proud of. We've got over 1500 crew members go through it, over 280 crews in the last 20 years. And we also have a station up in the Arctic called the Flashline Mars Arctic Research Station. And so I'm sure we'll get to talking about that in a bit.

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Michael Laine

But, you know, that kind of represents the big projects we do at the Mars Society.

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Michael Laine

Let's let's stick with your personal story a little bit further. You know, you you said you worked as Microsoft for quite a while and you've been volunteering for a while. How does that get you qualified to become the executive director of the Mars Society? What are some of the steps that you took, you know, the successes and failures that got you here?

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James Burk

Yeah, that's a great question. I mean, what's what qualified me the most was the last four years of working on a couple

of different projects that raised money for the Mars Society. One was Mars VR, our virtual reality project. And I, I led two successful crowdfunding campaigns for that, where we raised over \$130,000 for that project. I also did as a consultant working in the private sector.

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James Burk

I was a nonprofit management consultant and so I have several clients in the last couple of years where I help them with their nonprofit management strategies, some of their technology. For example, I helped the Catholic Community Services of Western Washington set up a tutor, a volunteer tutor database, and tracked attendance for their tutors that help low income students in Seattle for.

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James Burk

And I also worked on another nonprofit called African-American Reach and Teach Health Ministries. Help them with setting up some digital assets, digital surveys and other things that, you know, they were more of a sort of an analog organization with a file cabinet full of records and trying to go go digital. So it gave them some strategy on that.

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James Burk

So those were the immediate things that helped me be an executive director. What helped me with Mars is just my passion for it. I mean, I was a young man in college when the Mars Pathfinder mission landed on Mars in 97, and I was like glued to my television watching that and learning as much as I could about what JPL was doing.

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James Burk

I actually got the opportunity to meet Rob Manning a couple of years ago, and he's now the chief engineer at JPL. But back then he was in charge of the entry, descent and landing for Pathfinder. So he was the engineer that designed the aerospace aeroshell or the aeroshell, an airbag approach that landed Pathfinder, but also spirit and opportunity on Mars so that, you know, that kind of thing just was really inspiring to me to see us get back to doing real space exploration beyond orbit.

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Michael Laine

I really remember that. That was the first thing that broke the Internet, right? That was millions and millions of people were tuned into that. It did. It actually overwhelmed the most servers because it was the first time where going to Mars was up close and personal. And all you had to do was log into a NASA server to watch it.

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Michael Laine

It was it was quite astounding. I was not I was not really keyed into space yet at that point, I was still working. I was still working on and an internet company back in those days. And so it was a it was a blip on on, on, on my radar. But it wasn't, it wasn't my driving passion.

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Michael Laine

So really, you were one of the earliest pioneers in this whole in this whole field.

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James Burk

Well, back then, I was just a spectator. I mean, I certainly I was a tech person in college. I learned how to design websites. For example, in 1994, I actually did a website for the Jacksonville Jaguars football team as a fan, and they wrote me up in the newspaper as this enterprising 19 year old college student. But I was a tech guy, so I knew what they were doing with Pathfinder and putting all the information online.

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James Burk

They would get images back from Mars and put it on the website and people were downloading it. And I remember trying to download the super Pan, which was, you know, a couple of megabytes, you know, which was a lot back then.

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Michael Laine

Was a lot then. Yeah.

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James Burk

So but yeah, it was kind of, you know, it's a long time ago, but that was the first time where we really had a digital space mission that

everybody was interested in. You know, you see people going gaga over the photos from the James Webb Space Telescope, and it's kind of the same thing. You know, they're downloading photos and looking at them.

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James Burk

You know, back then we would download stuff and they had like the 3D glasses with the red.

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Michael Laine

And blue.

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James Burk

Lenses, you know, which I remember when I was a kid, they would have like movies on basic TV where they were 3-D and you'd have your glasses you get from the gas station. And so they were doing that with like the Mars pictures from the rovers and trying to see the terrain, kind of the undulating terrain at the Pathfinder landing site.

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James Burk

But yeah, that was, you know, kind of the bridge between analog and digital was what we were witnessing there.

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Michael Laine

Brilliant, brilliant. What would be some of the things that you would advise people if you know, to not make a particular mistake or or, you know, maybe an error in your career that you you know, you learned a lesson from. What would that lesson be? What would that error be? I think the reason I bring that up is because everyone always wants to talk about, you know, the successes.

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Michael Laine

But, you know, having a guy, having been the guy who stumbled several times, I think you really learn some important lessons from the errors. So where you misstep?

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Well, for me, I got a computer science degree, a business and computer science degree because I knew I wanted to work in the tech industry. I wanted to work at Microsoft and growing up. And so for me, that was my best preparation to to I thought to work there. The way it turned out, what I studied at my college, University of Florida, was not what I ended up using.

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When I worked at Microsoft. I learned things like assembly language programming and mainframe management and things like that, And that really when COBOL, you know, COBOL was great in the year 1999 because people were getting jobs, fixing Y2K bugs, but that was about it. That was a very limited, you know, career move for someone to learn COBOL at that time.

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James Burk

So when I got to Microsoft, like there was a whole other set of technologies and processes and working in a corporation, a big corporation that I was just really unprepared for. So if I had to do it all over again, I think I probably would have gotten an engineering degree or gotten some type of more, you know, hands on thing in college where I could get more hands on experience at a job than what I did, because what I did was very sort of academic, academic computer science.

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James Burk

I think the only thing that really helped back then was I learned about databases. And then that did apply because I did work on pretty sophisticated database projects later in my career, and some of that knowledge helped me. But that was about it. Like 90% of everything else was useless for me.

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Michael Laine

So.

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James Burk

You know, in the tech industry, there's plenty of like the best developers. Some of them never went to college. They're just savants or just

people that they know how to learn. They know how to pick things up and they're creative thinkers and creative problem solvers. And really the technology is secondary when you have that approach. And so for me now, with over 20 years of experience with my belt, you know, I can that's how I feel to it.

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James Burk

The technology is less important than just trying to solve the problem that you're trying to solve. And there's always multiple solutions to a problem. And so you need to factor in all the different factors when you choose what the best solution is. So but yeah, if I had to do it again, and I've told this to some of our students recently at the high school program I ran for the Mars Society last summer is like take a hard look at being a mechanical or electrical or some other type of engineer, because if you have an engineering degree and you can get licensed in your state, that's basically you have a job for the rest of

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James Burk

your life because you can do lots of stuff with that.

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Michael Laine

Very cool. Very cool. So let's kind of move towards let's move towards Mars. Let's move towards the Mars Society. Now, for the folks that weren't the 450 people that made it to Arizona. Let's talk about the conference that you just completed. Highlights from that. And then let's start talking about your new programs and the money behind it. All right.

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James Burk

Yeah, sounds great. So the conference was a great success. We have our conference every year. This was the first time we've had it since the pandemic. So normally, you know, back in 2019, for example, we had our conference at USC in Southern California, and there was about 300 people there. And we thought it was very successful. You know, we had four days of programming.

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James Burk

We had speakers like Greg Autry and a lot of the JPL team, Paul Wooster was there from Space X, and that was our normal sort of successful conference back in that era that we did for 18 years before that. So more than actually 22 then. Then when the pandemic happened, we had to pivot. And so Robert said to me, let's do a whole conference online.

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James Burk

How do you view the Mars Society?

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Michael Laine

Because not everybody knows who Robert is. So. Robert Zubrin Yeah.

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James Burk

Robert Zubrin is the founder and president of the Mars Society, very well known in the space community. He's the guy that wrote the book about how to get to Mars cheaply. So modern technology. And he's he started the Mars Society because he was he was trying to make it happen. He was trying to make humans to Mars happen.

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James Burk

And, you know, 25 years later, we've really moved the needle with the Mars movement. I believe so, yeah. But anyway, we we started planning of the virtual conference two years ago, and we held that in 2020 and it was a great success. We had 10,000 attendees. We also got everyone we asked to speak. We all said yes because it was virtual.

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James Burk

So we got Elon Musk, we got the NASA administrator, Jim Bridenstine. We got several other folks that we, you know, the who's who basically of JPL and all the rover teams and the science teams so that work on Mars. And so that was great. And then we repeated that conference format again last year. And then so for this year, we were going to go back to in-person, but we were going to do it as a hybrid event.

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So not just the in-person, you know, 2019 style conference with three or 400 people, but also have all the virtual attendees and have virtual presenters too. So it's really four ways. It's virtually attending and watching on Zoom, being in-person. And then also the people that are on stage in Arizona, you can see them on Zoom or what was an in-person and virtual speakers like Peter Beck, which spoke at our conference

virtually.

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So that's really like organizing two conferences. As you know, Michael, it was a lot to put to pull together, but we made it happen. The conference this year was very successful. The early numbers are we had 400 people in-person, which was our cap. We were capped at 400 because of the facilities we were at at Arizona State University.

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But then we had about 3 to 5000 watching online and it was fantastic. We had we were featured on the top of Space.com all four days with our livestream and all of our virtual talks happened. And, you know, we're in the process now of getting everything up on YouTube, but a lot of it was recorded during the livestream and can be watched right now on our YouTube channel.

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James Burk

So so yeah, we really feel good about the conference. We had speakers like Pam Melroy, the deputy administrator of NASA. We had Peter Beck we had Dr. James Bell from ASU, who's the designer of the Rover camera on Curiosity and Perseverance, and he gave an update on those missions. We had Dr. Marcia Ranke from the James Webb Space Telescope giving update on that.

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James Burk

Greg Autry spoke. We had Bhava Agwal from NASA's headquarters, who's a deputy associate administrator for nuclear propulsion Concepts, NASA, and she talked about nuclear power for Mars, which was a firsts, I think, for NASA to come out and talk about that publicly. So so yeah, we feel really good. And then on the Saturday evening, speakers were Michael Edmunds, who's the president of the Club for the Future of Blue Origin, also the SVP of Marketing for Blue Origin, and then also Aaron Boyle from Mongolia.

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So there's this really interesting organization in Mongolia. That's our chapter there. Now they're called Mars V, and they get funding from the Prime Minister's office in Mongolia, and they're a very large organization that's focused on humans to Mars, and they're building a analog research station that we're going to partner with them on in the Gobi Desert, and it's going to be a nomadic analog station.

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James Burk

It's a station where between each crew you can actually pick it up and move it to another location, kind of building off of the heritage of that part of the world. Right. And so we're very excited about about that partnership. And Aaron Boyle gave a great presentation, very impressive presentation that showed video of Robert visiting Mongolia and meeting with all the officials there and out in the desert and seeing, you know, scouting out locations for the analog mission we're going to conduct with them next May.

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James Burk

So it was a really good conference. Overall. Everything for the most part went really well and all the feedback I've gotten was positive from the attendees. So pretty happy with how everything went this year.

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Michael Laine

You know, on a personal note, I was one of the first people on my feet for a standing ovation for the Mongolian team because I was I was amazed. I was in shock. I'm not surprised in the space community very often. And you had mentioned it on our on our prior show, on a prior episode of Better Futures.

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Michael Laine

But I really had no idea. And candidly, I was I was skeptical. And then after their presentation, I'm like this this effort could be really significant, like really, really significant in the world. So I was so impressed by that. All right. So you mentioned the Club for the Future and you mentioned that, you know, the reason that the the society has a full time executive director.

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Michael Laine

Now, you so talk about talk about the money. How is that how is the how is the society been funded up till now? How does that change going forward? What are your hopes and dreams and expectations You know, for 2023, 24 and 25, I know you're there.

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Yeah, no, it's fine, because that's what my job is as executive director is to be on top of our fundraising and managing our money well. And as a nonprofit, we need to be smart about our money, right? Every dollar we get is a dollar. Someone gave us to go do humans to Mars, so we should spend that dollar wisely and we try to.

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James Burk

So the donation from Blue Origin, we kind of see as an endowment the majority of that money has not been spent. So there's rumors out there that the Mars society is just hemorrhaging money. I can tell you those rumors are completely false. We yeah, I have we are not. We're very solvent. We basically, you know, if you look at our 2019 tax return, you know, all of our tax returns are public because we're a nonprofit.

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James Burk

We file every year. But we were in 2019, we're about a 400,000 a year organization. That was our our was our operating expenses. And the majority of that was running our research stations. Right. You know, the majority of that is just operating this year through our full field season, where we have 12 to 15 crews and all all that entails us.

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James Burk

How do we normally get most of our money before the Blue Origin ran? Most of the time over the last 25 years, it's been through individual donations. So the vast majority of our funding comes from individuals. Some of those individuals are high net worth and give a bigger donations than others. But for the most part, we're funded by individual small donations and we sell memberships.

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You know, we have over 1500 members worldwide that are active right now. Each of those is paying either \$50 for a normal membership per year or \$25 for students and seniors. That's a huge part of our operating income. And then also we have a small number of grants that over the years we've gotten. So we've gotten grants from NASA through the space rebound program.

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And we've got we currently have a grant from the Utah Space Grant Consortium that helps operate the station in Utah, but that's a very small fraction of the money we get. And most of the money is through individual donations. In the past 20 years, there's been a couple of times where corporations have rented the address to do things like commercial shoots or other projects.

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James Burk

That's that's a little bit of money that comes in as well. And then way back in the day when we built the FlashLine station, we sold the naming rights of the station to a dot com called Flashline.com And so we actually are looking at doing that again in the near future, you know, so to generate some more money.

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James Burk

So when I look at my job as executive director and I've taken some courses on what normal nonprofit operations are, you know, normal being a nonprofit, not like the Mars Society, where we have this huge grassroots amount of support traditionally not, you know, normal nonprofits will raise funding through annual giving, through capital campaigns where they're like maybe raising money to purchase a building or start a new program that they've never done before.

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James Burk

And it's usually like a one time big fundraising push. And then there's also things like plan giving, so kind of soliciting to high net worth individuals, you know, to give when they pass as part of their estate planning. Right. We've never done anything like that. We've actually there's been anecdotes I've heard where we've actually been unable to meet those.

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James Burk

We've had people come to us and want to do that, and we weren't able to close the loop on that. So that's an area that I really want to make sure we have dialed up and we can support if people come to us and and want to do that, want to, you know, have a planned gift as part of their estate planning and then also ramping up our grant processes like applying looking out for grants that match what we what we would need for our stations and other projects and applying for those grants and, you know, building relationships with the grant making organizations.

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James Burk

You know, there's a lot of foundations in the US, for example, that give money for STEM education. And so like that's a great opportunity for

us to go out there and talk to those organizations and see if we can get small grants from them for our education programs, for example.

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Michael Laine

So you said that the budget in 2019 was around 400,000 or so.

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James Burk

And I use that example just because of the pandemic, because obviously things were different. The last two years. We were at a much smaller scale during this pandemic. We only had a couple of crews in 2020, for example. So now this year we're getting more back to normal. But when I look at 2019 as sort of a that's when everything was, you know, going normally for us.

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James Burk

So Right.

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Michael Laine

Right. A baseline that that we can use to kind of, you know, establish what happens next. Yeah. Okay. So you've kept most of this money from the club for the future, \$1,000,000 mostly in I'm going to say escrow. I don't know if that's the right term. It's probably probably a higher yield asset, but it's, it's, it's a sustaining.

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James Burk

Area.

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Michael Laine

Yeah.

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James Burk

We're not using it on any speculative investments, for example.

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Michael Laine

Right, right, right. No, of course not. So, All right. So that's that's kind of where you are. Most of the most of your operating budgets come in from other individuals. You just did the math. 1500 people at 50 bucks is only \$75,000. So that's only a portion of your your membership only covers a portion of your budget. Right.

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Michael Laine

You know, so I can see how people are wondering about hemorrhaging money. Obviously, you know, that's not true. And we both know that's not true.

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James Burk

I think one of the reasons they say that is just because we do so much stuff.

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Michael Laine

Right.

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James Burk

But we do it with volunteers like almost everyone that works with the Mars Society is a volunteer. Right. And we've been able to really do amazing things with volunteers like the conference we just were part of. I mean, we had 30 volunteers. That's how we did it. You know? And so people, I think, don't really realize the power of well-managed volunteer groups, what they can do with a very small amount of money.

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Michael Laine

Well, I'm going to do a shout out to Carrie and Leah, because they they certainly did an awful lot, you know, before, during and I presume after the after the event year that Leah just got the Volunteer of the Year award. And I know that the whole thing would collapse around around us if Carrie wasn't doing her her job.

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James Burk

So you're talking about Carrie Fay who's the administrative director of the Mars Society. She's yeah, she's a fantastic person and been the rock solid core of the Mars Society for over ten years now. Yeah.

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Michael Laine

Yeah. So you do a lot with not spending a lot of money. So that's a pretty Spartan way of approaching things. Excellent. Because. Because you know, you know, there's no there's no expectation that. Well, no, I'm going to ask the question. There's no expectation that there's another million dollars sitting on the edges somewhere right. That's not how you operate.

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James Burk

No. I mean, we we don't operate that way. We try to operate as if we're going to go do something. We're going to figure out how to pay for it ahead of time and fundraise for that. We're not going to rely on just spending money with no you know, no plan of how to how to recover that or or sustain that program.

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James Burk

Really, it's about sustainability. If we're going to go down the path of doing something, we don't want it to just be a one off. We want to, you know, make commitments and do it annually. And that's typically what we do with our large programs. So every one of the VR project was new five years ago, but we've steadily made progress for five years now and we're going to continue to do so.

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Michael Laine

So let's talk about the programs that are in place now and what you have on the near-term horizon. What are those programs? What do you expect to accomplish from them and how much do they cost and where is that money coming from?

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James Burk

Yeah, so I mentioned the Mars Desert Research Station. That's our largest program that operates in a field season that runs October through May. So we just started the new field season. The first crew just finished up in the second cruise, about to go in December, I believe today that that'll run for the next few months, you know, next 6 to 9 months, and then we'll then we'll basically shut down for the summer and do a retrofit at the end of the field season in the beginning of next one.

00:30:03:20 - 00:30:37:17

James Burk

And that's where we spend a little bit of money to improve the station as well. So for that program, as I mentioned, we funded through individual donations, we funded through crew fees and a couple of grants, small grants. We are going to do a crowdfunding campaign for the Mars Desert research station very soon. It's something I've been putting together with my team, and so that will also help both boost our improvement budget because we would like to make some improvements to the outer hull of the station and some other things, some upgrades as well.

00:30:37:17 - 00:31:05:16

James Burk

So so that's that's an example of us kind of doing a little extra fundraising to make something happen for one of our projects. But overall, it is a sustainable project. We've been able to successfully run it for 20 years now. We also have the Flashline Mars Arctic Research Station, and that one, we don't send a crew there every year because it is very expensive, as you can imagine, to mount an expedition to the Arctic costs over \$100,000 for one crew.

00:31:06:03 - 00:31:43:06

James Burk

So the last time we were there was in 2017, we had a crew that spent 80 days at the MDRS and planned to spend 80 days in the Arctic. So it was called the Mars 160 crew, and we're planning to do another mission next year. We're already talking to some potential teams that might be part of that, and we're telling all of them that they part of their part of them being selected to be on a crew to Flashline is being able to fundraise and help us fund that mission, which we estimate will cost between 120 to 200 K And so so that is.

00:31:43:19 - 00:31:49:20

Michael Laine

So the team has to fundraise that or that is that their portion or the total.

00:31:50:17 - 00:31:54:19

James Burk

That's the total that the team needs to assist us in fundraising for.

00:31:54:27 - 00:32:01:11

Michael Laine

Okay. So they don't have to come up with the whole 150. It's going to be, you know, they do some you do some, they do some, you do some.

00:32:02:13 - 00:32:25:10

Well, possibly we'll see. So we'll get we're early on this because we you know, it's this is next summer and there's certainly a lot of interest, but we currently don't have the funds to make that on in that program line, you know, So that'll be part of the activities of funding for that mission. And we don't think it's going to be hard to raise that much, by the way, for that mission.

00:32:26:19 - 00:32:48:24

Michael Laine

Right. You've been doing this for 20 years with this site in Utah. You certainly know how to operate this. And and certainly you've got the visibility and the credentials to to back up, you know, to justify the expense. So that's exciting.

00:32:49:07 - 00:33:15:20

James Burk

And those things represent our analog research program. So it's a worldwide we're part of a worldwide analog research, you know, a community or collective of these stations. Now, we built the first two of these, but there's many of them out there now around the world. There's one in Iceland, there's one in Hawaii, there are several in Europe. They're working on one in Australia actually, that we're part of.

00:33:16:09 - 00:33:38:10

James Burk

And also the Mongolia team, which are they're also an analog station. Are we still going to be on next year? So that program of research is also very important to the Mars Society. Like we want to make sure that we're maintaining a leadership role in what that community is doing. And the name of the game is Let's get ready for humans on Mars.

00:33:38:10 - 00:34:06:00

James Burk

I mean, the research team for our both of our stations is the human factors, the operational challenges, the human operational challenges of living and working on Mars. Right. And so, you know, part of maintaining a leadership role to me means that we have research objectives that we are talking to folks about. And so the crews we select or are part of the research objectives to fit into what we're trying to do.

00:34:06:18 - 00:34:34:27

James Burk

You know, because each individual crew that comes to one of our stations has their own science mission, you know, their own experiments, they're going to run. But we want all that to fit together into a theme of of operational challenges. So a lot of people, when I describe to them for the first time what we do at the Utah station, they assume we're like literally using the hardware you use on Mars and we're just testing it out, you know, And so we're not actually doing that.

00:34:34:27 - 00:34:56:22

James Burk

We're not we don't have million dollar spacesuits and, you know, you know, half a billion dollar, ISRU gear because that really doesn't exist yet. What we are doing is simulating that we're simulating what it's like to have a crew of 6 to 8 people work on Mars for two weeks and explore large areas of Mars. You know, that's that's what we're operationally doing.

00:34:56:22 - 00:35:05:11

James Burk

We have people gear up in simulated space suits to go out and rovers and get kilometers away from the station and come back. You know, that's what we're trying to practice.

00:35:06:00 - 00:35:42:14

Michael Laine

So for those that don't know, many years ago, my team went down to MDRS and brought our high altitude balloons with robots tethered back, and the robots were climbing back and forth on the tether up there. And the point of that was to basically be a mobile mast for a communications relay. We call it tethered towers. So we went out there, gosh, you should have been in 2004, 2005.

00:35:43:19 - 00:36:07:02

Michael Laine

So that's been something they've been working on for years. Different technologies, different systems, GIS, geographic information systems have come a whole long way in the 20 years since the last time we were out there. So it is important. That's important work. And that's just that's just me doing the one thing that I know of back out there.

00:36:08:14 - 00:36:38:03

James Burk

So one of the things that I'm working on is doing a using our VR project, right to do a field science demo where we actually have someone out in the field that's maybe looking for rock samples or biological samples, and they can actually work real time and collaboratively with someone in VR in the Hab. So the person in VR would actually be able to guide them through the terrain and help them and support them with what they're trying to do out in the field.

00:36:38:19 - 00:37:00:27

James Burk

And there'd be data transfer back and forth between the two so that they would be able to see vitals and other metrics, but also like the science objectives and the map coordinates and taking notes of what you're seeing, you know, labeling samples and things like that digitally. So it's a really interesting project. We have a few a few people at the Mars Society helping me out with that.

00:37:00:27 - 00:37:08:02

James Burk

And that's one example of us trying to really drive the research approaches forward for field science at the state level.

00:37:08:05 - 00:37:36:03

Michael Laine

And also make it accessible to folks. Right. That that, you know, the backers of those campaigns have access to stuff. You've publicized that on on the website. Like there's a lot of ways that you try to I'll say, democratize the research that you're that you're doing to share it with other folks. I think that's I've always really admired admired that.

00:37:37:06 - 00:37:44:26

James Burk

Yeah. We've had over a thousand research papers been written by people that have gone through the MRDS that we're really proud of that.

00:37:45:11 - 00:37:50:02

Michael Laine

Is there is there any sort of library or collection for all that, or is it.

00:37:50:12 - 00:37:53:06

James Burk

We're working on that. That's a question that comes up a lot.