

Multiple Ways to Fund Mars

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ABSTRACT

This article by Frank Stratford of MarsDrive discusses a response on how Dr Robert Zubrin's recent Dragon Direct might be funded from alternative, non NASA sources and how the mission itself might be modified to more completely satisfy the health and safety concerns these history making missions would entail. In a point by point form various ideas (including a Mars Consortium) are proposed for the purpose of initiating better developed ideas on how the Mars advocacy community can do more than simply lobby NASA or her congressional bosses by seeking private and public means of funding in a strategic and far reaching plan that rests on multiple ways to fund Mars missions, much like the individual threads of a rope combined give it strength, so several of these ideas, if combined, could lead to actual funding of a humans to Mars mission in the next decade.

My name is Frank Stratford, President of MarsDrive, a group dedicated to getting humans to Mars (mostly from private resources). Our group focuses on mission design and finding a financial solution so I wanted to share with you some of our thoughts and how they could be adapted to work with your recent plan for the Falcon 9 Heavy. I'd like to push this plan to reality this time and not just throw it into the US Government's hands to think about for another 20 years and here is how I think we can "go around" them.

First here is a list of Mars related revenue ideas which if controlled and enacted by a private consortium would guarantee your design became a reality-

Areas of revenue potential for a Mars mission-

1. R&D and mass sales of soon to market technologies
2. Share investment (IPO, etc)
3. Individual venture capital
4. Large non space company investment (sponsor/branding)
5. Governments that will contribute some funds in return for science ROI (or crew spots)
6. Sales of media rights to cover first mission
7. Reality and spin off shows and movies/media or games.
8. Spin off merchandising- toys, books, etc
9. Sample sales (small and large scale)
10. Mars Lottery" to choose one crew member from list of approved applicants- Sell tickets
11. Souvenirs such as the first boot on Mars, space ship, hardware etc
12. Large scale government investment later in the program as risks are reduced to their acceptable levels.
13. Large space company investments
14. University involvement to help lower development costs
15. Space angels

16. General public campaign (they invest \$20 in return for their video/message in Mars settlement and say 5 minutes with a robotic rover)
17. Celebrity investment of publicity, endorsement and money
18. Sales of crew seats to approved applicants (\$1 Billion each- can come from governments or wealthy individuals/companies).
19. Patents developed for mission
20. Risk taking billionaires.
21. Advertising revenues

The above described methods of generating revenue from a Mars mission (or program), are not exhaustive but merely to indicate that profits can be made for a cheap program to set humans on Mars. IF controlled by a private consortium all of these areas and more could be harnessed to varying degrees to ensure full and ongoing funding for humans to Mars and later settlement drives. Controlled privately the focus would be laser clear and pointed at fast revenue turn arounds, and under this scenario the consortium would not be putting all its eggs in one basket.

If we accept only sending 3 flights to Mars and 2 crew, this substantially reduces the chances of funding but not totally. I have an open mind, and as much as there are elements of Dragon Direct I disagree with, if costs can be kept low with the 2 crew plan, it might be possible to find some bold billionaires or wealthy companies willing to take the risk, though I think more likely an individual would be the more apparent candidate for funding something at that risk level. So let's consider the "rich individual" option for minute. Say we get Bill Gates or some other billionaire to fund this cheap mission. Questions arise- Will they want to be associated with a failed mission that kills people? Lower level billionaires like Richard Branson (who is a risk taker) would definitely consider this program, but unfortunately they don't have the disposable cash to fund this- Though someone like Richard could head up a "billionaire buy in" and kick it off with a modest contribution himself. If we managed to raise the funds this way there would likely be no real reward for the investor except glory and making history which is valuable, but hard to justify to their shareholders. (Though I think Richard is perhaps compromised now as he would be trying to protect his sub orbital flight business and a failed Mars mission would not be good for his profits).

I think we could win the billionaires of this "risk taking" calibre much easier within the context of mixing their donation in with the other 20 ideas. In this way we could in fact promise them a financial return, not just making history.

Finances raised need to meet some objectives-

1. Must fully fund R&D and first mission to Mars.
2. Must ensure an ongoing program towards settlement options.
3. Must keep risks as low as possible within the budget chosen.
4. Must guarantee success (no matter how many lives are lost or cost)

I recognize there are other space priorities such as lowering space access costs, but all of these will receive a real shot in the arm from a successful outpost on Mars in operation. All will benefit.

Even if we found someone who didn't care about risks or failure, this would only get us one shot to Mars, and this is not what any Mars advocate or explorer wants to see. But I'm not going to say no just because we only get one shot.

So here is a way forward -

1. Find some wealthy benefactors who like to take risks
2. Start the Mars Consortium, at least from an intellectual capital and management point of view. (Get universities involved to help lower costs and give credibility)
3. Create a structured revenue plan, even if it doesn't pay for the whole mission, it may offset significant costs
4. Develop pathways that bring about longer term settlements and sustainability (In short-enact all of the above revenue ideas)
5. Get the plan finalized by experts
6. Publicity campaign with big name celebrities to get the public interested (and increase revenues)
7. Build hardware
8. Train astronauts and test components and stages
9. Launch missions
10. Make history!

Relying upon the US Government to send to astronauts to Mars for 2.5 years in a Dragon capsule is not going to happen. But if we modify this plan, and make it happen from private resources, I have no doubt the US Government and other governments will buy in at that stage. They won't want to be shown up by the private sector in something as important as this program, and AFTER a successful private mission I have no doubt that we will have massive leverage to raise government funds for much larger scale mars programs at that point.

So here is how we might do it via private means but to add some safety factors which will help in raising credibility and interest and more importantly- Funding-"Dragon Direct Expanded"

1. 7 Launches/Flights for first mission.
2. Use expandable habs as proposed in your appendix for extra living space.
3. Fly 5 crew in 2 separate dragon/habs.
4. 7th Flight is for pressurized rover and extra supplies.
5. Use spinning artificial gravity for both crews
6. Both crews (one with 2, one with 3) fly within days of each other so land at the same time.
7. Crews do have 1 trained medic/surgeon (with secondary geology skills perhaps?)
8. Extra polyethylene, water and demron shielding "shroud" is wrapped around capsule/hab combo from unmanned flight cargo ejections into LEO.
9. Land expandable hab on Mars (at least one, if not 2).
10. Test medical effects of martian gravity on crew throughout surface stay, and if acceptable, return 2 or 3 crew and leave 2 for next mission return window. (Settlement option) If unacceptable, return both crews.
11. If medical checks are acceptable- Send an 8th unmanned resupply flight with new rover and supplies. (Before 2nd mission is launched)
12. One or 2 crews return with samples and consortium gears up for new missions/projects

The above described mission, which incorporates all of your elements and expands upon them to lower risks and increase investor confidence that we will make it and we do have a back up plan.

By flying the above mission, we answer the naysayers on several fronts-

1. Radiation risks
2. Gravity risks

3. Health risks
4. Supply risks
5. Financial logic (by ensuring a longer term program is the outcome)

The reality is many mars advocates, and especially MarsDrive members have already considered plans based on Falcon 9 Heavy and sending one or 2 crew, just to get a toehold on Mars, but those sorts of plans fail to attract funding, so we have to beef things up a bit with answers to the risk factors posed by this adventure to Mars.

The US Government has a \$14.3 Trillion debt right now and growing every day, so asking them to fund your core proposal (without the expansions) will never work. They are on a different path sadly. I commend you for making the switch to a private mission design, but now I ask you to consider the other 50% of the problem- private funding. Government funding will only remain a dream, and if relied upon again will kill off most of what is left of Mars advocacy in the world

Who Can do this?

We Can! Mars advocates can make this happen if we band together and give our best shot. We always bemoan the fact that if only someone had the “will” to send humans to Mars we could get there. Well guess what?

WE HAVE THE WILL. It has to start with us, not some political process we can't control. What would you like to do?

There are those who look at things the way they are, and ask why... I dream of things that never were, and ask why not?” (RFK Quote).