

Re: We can meet all our needs through space development

# Re: We can meet all our needs through space development

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- *From:* BradGuth <[bradguth@xxxxxxxxxx](mailto:bradguth@xxxxxxxxxx)>
  - *Date:* Thu, 31 Jan 2008 09:55:03 -0800 (PST)
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The laws of physics are the same, and for the most part the best available science hasn't changed all that much over the past decade, and yet there's still no Mook H<sub>2</sub> as green hydrogen flowing anywhere in sight. What gives?

There's no question that humanity is quickly outgrowing the limited resources of this badly pillaged, raped and polluted planet, although going off-world has loads of spendy and energy consuming problems that have not been resolved, especially on behalf of accommodating our extremely frail DNA that's not exactly gamma and X-ray proof.

Without an affordable and technically doable surplus of Willie PV energy, along with a healthy cache of all that green and relatively cheap H<sub>2</sub> gas that'll yield those \$8/barrel of synfuel from coal, we're screwed unless we go all out nuclear and having to continually prepare for surviving WWII.

. – Brad Guth

On Jan 31, 9:11 am, Willie.Moo...@xxxxxxxxxx wrote:

On Jan 30, 9:25 pm, Einar <[eina...@xxxxxxxxxx](mailto:eina...@xxxxxxxxxx)> wrote:

On Jan 30, 3:08 pm, Willie.Moo...@xxxxxxxxxx wrote:

On Jan 30, 9:44 am, Ian Parker <[ianpark...@xxxxxxxxxx](mailto:ianpark...@xxxxxxxxxx)> wrote:

On 30 Jan, 12:18, Einar  
<[eina...@xxxxxxxxxx](mailto:eina...@xxxxxxxxxx)> wrote:

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On Jan 29, 2:13 pm, "Mike Combs"

<mikeco...@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>  
wrote:

"Einar"  
<eina...@xxxxxxxx>  
wrote in  
message

[news:b8db2464-6d7e-47c1-b641-870a89468e4e@xxxxxxxxxxxxxxxx](mailto:news:b8db2464-6d7e-47c1-b641-870a89468e4e@xxxxxxxxxxxxxxxx)

This  
sounds  
more  
like  
one  
would  
hope  
that  
the  
world  
at  
2099  
might  
be  
like.

Write  
a  
schy  
fy  
book  
on  
this,  
a  
suggestion.

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It will most  
certainly  
remain a  
very-distant  
science-fiction-y  
concept for  
as long as  
we choose  
to view it as  
such.

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Regards,  
Mike  
Combs

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By all that  
you hold  
dear on this  
good Earth  
I bid you  
stand, Men  
of the West!  
Aragorn

Now, SpaceX is still  
struggling with their rocket,  
Ares is in  
development problems...and  
yet those are a lot less  
ambitious than  
what is suggested here  
something with 500 ton  
LEO capability.

It's plans like these with  
everything assumed to go  
right that aren't  
believable.

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I don't understand Ares. How is it that almost 40 years ago Armstrong and Aldrin went to the Moon on top of a Saturn 5? In what respects is Ares "better" than Saturn? Certainly not in \$/Kg.

– Ian Parker– Hide quoted text –

– Show quoted text –

Its a function of the amount of money spent and how wisely it is spent.

I have given you my ideas here. Einar says they're not believable and compares what I have proposed with something on a whole different order – apples and oranges.

Saturn V cost \$9 billion and 6 years to develop – using results of DOD programs on the E1/F1 an J2 engines with 13 vehicles built and flown.

I propose taking an ET sized airframe propelled by an annular aerospike engine, with an RS–68 pumpset (3) in each engine – to produce a ET sized booster– stretched 40% – massing 1,000 tons at lift off, creating 1,400 tons thrust at lift off – operating 7 at a time to create a three stage operation to loft 500 tons to LEO. They will have an advanced thermal protection system and be fully recoverable with downrange tow planes picking up the pieces.

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I estimate that this program will cost \$6 billion to complete in 4 years and result in 4 vehicles that put 500 metric tons into orbit each launch at a cost of \$70 million (\$10 million per element per flight)

Why does this seem infeasible? What specifically is infeasible about it?

Mind you, you are suggesting a difficult and expensive development program.

No I am proposing a large number of interrelated programs with a common vision. The development of our interplanetary frontier.

You are actually suggesting a good number of expensive and difficult development programs.

Yes, with each opportunity structured as a separate finance company using a project financing model.

You may have some money, but you are not a trillionaire.

There are 9.5 million millionaires in the world. Collectively they control \$40 trillion. This is largely liquid. They are continually looking for good returns on this money. Of this approximately 20% is earmarked for credible high risk investments.

My success with the eight projects I am currently sponsoring, will allow me to sponsor other more risky projects going forward. I will also maintain ownership by putting in the early stage capital, which is always good news to a prospective investor.

I mentioned the other programs to demonstrate that much less ambitious projects have run into development difficulties, meaning...ought to have been blatantly obvious...

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Projects fail when you run out of money before you run out of problems. Oftimes programs are underfunded and get an undeserved bad reputation. That is what I find maddening about your responses. You say X did thus and so, without any analysis or understanding. X may very well have done thus and so – but unless you know how X works and the detailed history of X – you can't really conclude anything about it.

Projects succeed when you run out of problems before you run out of money. Someone may say, Conestoga lost its shirt. Yet the Saturn program in less time produced a rocket that sent men to the moon. Of course Conestoga was limited by the capital a group of angel investors could throw at it. Saturn spent \$9 billion and in six years did amazing things.

Financial genius is as important as technical genius in getting things done here. Humanity has enough money. I even have the phone numbers of all the people who have most of it. I now have a business model that lets them risk a portion of it on new technologies.

that your program is likely to encounter  
development difficulties scales large as well.

People are willing to take risks. The larger set of interconnecting programs is broken down into a series of projects. Buying a basket of project positions limits risk and guarantees a low level of return.

Think of an oil company. Oil companies routinely sell positions in a wide range of projects in response to their exploration and discovery operations. They have an over-riding vision of how they will operate. The opportunities presented by their exploration and discovery activity are organized and financed one at a time. So, you don't buy BP – you buy BP Alaska pipeline company, or BP Shenzen province company and so forth.

Same here.

There is an over-riding vision of developing off-world resources. I have an R&D department, and an opportunity development department, and we crank out projects that on balance make money. We then tap into the 9.5 million SEC qualified people on the planet, and ask them for up to \$4 trillion in risk capital.

Maybe you can find trillions to spend when all of what you are proposing is added together.

Well, there is an order of battle as they say.

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Clearly, the mere development of that craft will take a while.

The heavy lift launcher, with its launch facility in New Mexico, will take 4 years and cost \$6 billion. This will build a fleet of 4 of the largest launch vehicles, – built around 28 launch elements.

There will have to be experiments,

YES. Stennis is available for static tests. Dryden and White Sands are available for suborbital tests.

i.e. the aerospike engine is yet to actually fly.

That is true, but the folks at P&W say that nozzles are not a problem. They have worked with innovative nozzle designs and new airframes (the DCX used a deeply throttled RL10 made specifically for the program at very low cost) – so, this is more than just hand-waving sir. I have qualified vendors who have given me budgets time frames and all the rest..

Now, you might pay for this if you would first use the thing in a singular to launch satellites for some time, till the bugs have been worked out.

The bugs as you call them will be worked out in numerical simulations first, then in ground tests, then in suborbital flight tests.

the nice thing about a reusable vehicle, is you can build test articles and shepherd them all the way through to production. You can also build subscale test articles. Another reason I like P&W – they have the RL10 – Reduce the 1,400 metric tons of thrust on each of the boosters of the full scale launcher to a 45,000 pounds of thrust on a subscale model – and you get a dandy little 7.8 metric ton launcher as part of the deal. In the various configurations you can do 2 ton 4 ton and 8 ton to LEO.

At current costs per kg – these will start earning their keep well before the larger program is done.

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Then the development curve could be something similar to what say Kistler is trying to achieve,

Kistler doesn't have the right financial structure to raise the funds needed on the scale needed.

first trying to establish a reusable launch vehicle and later they intend to expand on it.

This is a recipe for death – since any failure turns off the money supply. It would be like an oil company leasing land and raising money one exploration well at a time. No, failure on one well would kill the program. You raise ALL the money you are likely to need to achieve your longer range goal. It doesn't matter how much that is – failure to achieve this first step – means the program is very likely to fail. Those who cannot see how to raise the billions needed – virtually guarantee failure in this way, and make it more difficult for those who come after.

Space X intends the same.

They are letting their inability to raise the needed capital drive their strategic growth. Can you imagine an oil company doing that? They wouldn't last a quarter – they'd go belly up at the first hiccup in production. Same here.

Now, that can lead to a family of launch vehicles,

If EVERYTHING goes perfectly right – maybe. You are AND ing together the pieces not OR ing together the pieces so you are guaranteeing failure rather than success.

eventually the large powerful vehicle

Very unlikely very unlikely – unless you have all the money you need and then some at the outset.

can be realized in manageable steps.

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Obviously you will not spend your money all at once. You are confusing the finance piece with operations piece and putting a lot of pressure on your engineers because your finance people don't know how to raise all the money needed.

Then as you  
suggest multiples of that can be used.

You will only attract qualified vendors who are working for your program, not against it, if you have a purse that has ALL the money for a ...

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