

The Space Future Project

Explaining the Potential of Space Tourism

~ or ~

10 Things to Tell a Venture Capitalist

(When You Only Have 5 Minutes)

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Space Future Consulting

The Story So Far

- Space Future Consulting
 - Identified space tourism early on as the key to opening space
 - First detailed research into business feasibility of space tourism: 1986
 - First ever market research: 1993
 - Started before the mass-market Internet
- The Space Future Website
 - Public archive of space tourism information: 1997
 - Created to boost the credibility of space tourism

Changing Public Perception

- In the 10 years since Space Future started operation, perceptions of space have changed.
- But it is still very difficult to raise capital, and there are still perceptions to overcome.

How do you get people to look outward?

- Ask: Why *should* an investor put money into space tourism instead of, say, a Swiss bank?

The Space Future Position

- The key to development of a profitable, expanding space industry is *space tourism*.
- The first step in developing a space tourism market is the initiation of *suborbital services*.
- The cost of entry and business risk is much lower than current *public perception*.
- The market potential of space tourism is massive, with the prospect of *exponential growth* for several decades.

10 Things to Tell a Venture Capitalist

(when you only have 5 minutes)

1. There is *overwhelming* demand for space tourism services.
2. It has explosive growth potential.
3. Aviation is the business model, not space.
4. Satellites won't cut it (The 50:50 Problem).
5. Space agencies don't want a commercially viable space industry (really).

10 Things to Tell a Venture Capitalist

(when you have 2½ minutes left)

6. Major aerospace companies are not motivated to challenge agency domination.
7. To open up the market we need reusable launch vehicles (RLVs).
8. No, the Shuttle is not an RLV!
9. The suborbital market is the stepping stone to orbital, lunar, and beyond.
10. Suborbital vehicles are comparatively low-risk, low-cost, and can provide ROI.

The Demand for Space Tourism

- Tourists are the only cargo that will pay to go to space more than once.
- Will do so without needing to make a profit.
- Market research has repeatedly found demand:
 - SFC First Research: 1986, 1993
 - NASA General Public ST & T: 1998
 - US Commerce Department: 2002
 - Futron ASCENT Study: 2003
- Enough demand to be a viable business.

We Need RLVs

- Space tourism is the industry to open up space.
- To operate space tourism services, we need reusable launch vehicles (RLVs):
 - Reusable means that, like commercial aircraft, RLVs have *no expendable parts*.
 - Because RLVs are reusable, they can lower the cost of launch and so can be operated *at a profit*.
 - RLVs can be certified to *carry passengers*.
 - Some RLVs can operate from *conventional airports*.

The 50:50 Problem

Many space business plans have relied on the satellite market to provide demand for vehicles.

Year	1	2	3	4	5
<i>Expendable Launch Vehicles</i>					
Vehicles made	50	50	50	50	50
Launches	50	50	50	50	50
<i>Reusable Launch Vehicles: 50 flights/year - Satellites</i>					
Vehicles made	1	0	0	0	0
Flights	50	50	50	50	50
<i>Reusable Launch Vehicles: 50 flights/year – Space Tourism</i>					
Vehicles made	50	50	50	50	50
Vehicles operating	50	100	150	200	250
Flights	2500	5000	7500	10000	12500

Satellites can't provide the market for RLVs.

No, the Shuttle Is Not Reusable

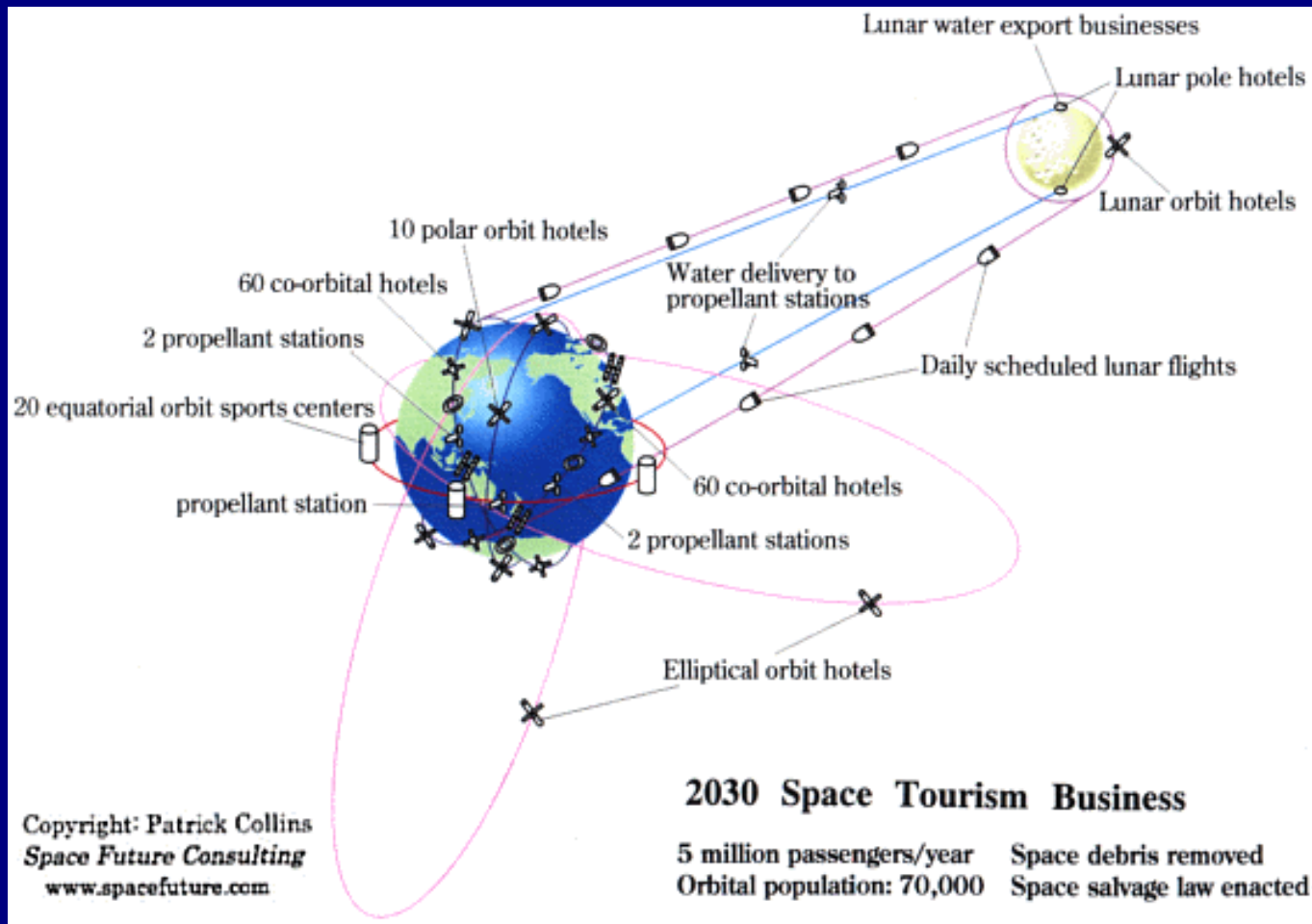
- People often dismiss the idea of low-cost commercial RLVs because, after all, the Space Shuttle is reusable – and very expensive.
- This is, of course, not really the case:
 - Replacing the external tank and boosters means that *every* Shuttle flight is its *first* flight.
 - The Space Shuttle costs ~\$500m to launch. That's more than the *development cost* of some suborbital RLV proposals!
 - The Shuttle is not, and never was intended to be, a *commercially* viable vehicle.

The Usual Suspects

- Space agencies don't want you to go to space:
 - RLVs eliminate their effective monopoly in space
 - Profitable commercial space threatens their budget
- Major aerospace companies are not motivated to disagree:
 - Government contracts provide millions of tax dollars
 - Almost zero risk, even in the event of catastrophe
 - Developing commercial RLVs might threaten future awards of government contracts

The 2030 Scenario

What if 10% of space agency budgets were directed into the development of a commercial space industry?



Suborbital RLVs Are the First Step

- Approximately $1/100^{th}$ of the difficulty of orbital.
 - $1/8^{th}$ of the required velocity
 - A fraction of the fuel, and so a fraction of the size
 - Simpler, much lower cost, much less risk
- Market research has shown that it is possible to operate suborbital tourism services *profitably*.
- Suborbital vehicles and vehicle operations provide the learning experience to move to the orbital phase.

The Potential of Space Tourism

Space tourism isn't just a business in space:

•Excite the public

- *Explain* the promise of space
- *Entertain* with theme parks and exhibits
- *Educate* next generation: “think outside the sphere”

•Excite the economy

- *Expand* aerospace industry
- *Construct* spaceports
- *Create* scientific and technological stimulus

Space Future Consulting

- The Space Future Website
 - <http://www.spacefuture.com>
 - Operating since 1997
 - Over 200 papers and documents archived
 - The *No.1 Internet destination* for space tourism
- SFC – Growing Internationally
 - Now operating in Europe, Japan, US, Asia
 - Japan: See <http://www.spacefuturejapan.com>

References

- “Space Activities, Space Tourism, and Economic Growth” (SFC, 1999)
- “General Public Space Travel and Tourism” (NASA, 1998)
- ASCENT Study (NASA/Futron, 2003)
- “Space Tourism Market Demand and the Transportation Infrastructure” (SFC, 2003)

All available at <http://ww.spacefuture.com>