



The Space Settlement Institute

*A think tank dedicated to finding ways to make
space settlement happen in our lifetimes*

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To: Rhett Herrera, Contracting Officer
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cc: Ken Davidian, Deputy Project Manager for Centennial Challenges
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**Re: REQUEST FOR INFORMATION - NASA CENTENNIAL CHALLENGES
PROGRAM SUPPORT CONTRACT OPPORTUNITIES**

Reference Number: ESMD-CC-0404

Dear Sirs,

The Space Settlement Institute suggests that the U.S. Government, through NASA, offer an extremely valuable prize, "The Space Settlement Prize", for the first private entity which establishes a permanent space settlement, on the Moon or Mars, which meets specified conditions. This would clearly be the ultimate Flagship Centennial Challenge.

A tremendous monetary prize would be the best incentive for private enterprise, but it is unrealistic to expect Congress to appropriate those funds at this time. Fortunately, a system of recognized property rights in space would achieve the same result. Our proposal - at www.SpaceSettlement.Org - would require "out of the box" thinking, but would have the advantage of not requiring any appropriation of government money.

This response will talk about the specific conditions we propose, the specific reward, the needed legislation (including a sample draft law), and will go briefly into what the Space Settlement Institute could do to cooperate, if NASA decides to pursue this option further.

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The most important recommendation of the President's Commission on Implementation of U.S. Space Exploration Policy was Recommendation 5-2.

"Recommendation 5-2. The Commission recommends that Congress increase the potential for commercial opportunities related to the national space exploration vision by:

- **Providing incentives for entrepreneurial investment in space.**

- **Creating significant monetary prizes for the accomplishment of space missions and/or technology developments.**
- **Assuring appropriate property rights for those who seek to develop space resources and infrastructure."**

The Aldridge commission's report (in Section III, B) outlines one of the possible ways the U.S. could establish a commercial incentive as recommended:

"... the Commission suggests that ... as an example of a particularly challenging prize concept, \$100 million to \$1 billion could be offered to the first organization to place humans on the Moon and sustain them for a fixed period before they return to Earth."

The other way the U.S. could provide such an incentive is through establishing a system of recognized property rights in space, such as that proposed at <http://SpaceSettlement.Org/>.

If the private sector could be provided a powerful incentive to finance and build a regular space transportation system and permanent Lunar base, concerns about a long-range space program overly burdening the taxpayer would evaporate. Corporations like Boeing, Lockheed Martin, and others already have the technical capability. All they've needed is a sufficient profit motivation.

The "Space Settlement Prize" would instantly create a strong profit incentive for private industry to underwrite the development of Lunar bases.

The "Space Settlement Prize" would invoke a tried-and-true mechanism used successfully by governments throughout history to encourage development of uninhabited regions – the allocation to private entities of large tracts of land in exchange for building settlements and facilities that meet government-defined standards and benefit everyone.

While traditional land grants similar to those used by the U.S. government to develop the old West are not possible in space because national ownership of land is forbidden by the 1967 Outer Space Treaty, legislation could be enacted to achieve the same ends using the related concept of "land claims recognition."

Under a land claims recognition protocol, Congress could pass legislation providing that for any private, non-government corporation or consortium that financed and built a space transportation system and permanent Moon base, and sells passage on their ships to anyone willing to pay a fair price, a limited (but still very large) claim to Lunar land around the base would be legally "recognized" by the U.S. government.

Recognition means the government would acquiesce to, or decide not to contest, the claim – but not assume any sovereignty over it. Once the space transportation system and Lunar base were certified, by NASA with or without the assistance of the Space Settlement Institute, the private consortium would be free to immediately mortgage or sell, back here at home, some of their Lunar land deeds to recoup their investment and make a profit.

If NASA is at all interested in pursuing this option, The Space Settlement Institute would be in a position to help NASA in several different ways, besides having helped to identify the best possible prize.

For example, we could help to get legislative approval for it, help write the rules for the contest, help to promote the contest, help to secure competitors, and/or help judge whether the prize conditions had been met, as NASA wanted.

Fortunately, as mentioned, “The Space Settlement Prize” as a whole would be extremely low cost for the U.S., but The Space Settlement Institute would be in a position to help NASA keep even overhead costs low.

Besides identifying potential competitors, The Space Settlement Institute could also help create information and materials targeted at them; disseminate information and materials to them; discuss the challenge with them and answer their questions about rules and other details.

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Challenge Publicity

In the area of securing general publicity for the Prize, the Space Settlement Institute could provide specific services to help generate excitement and public interest. The current Institute team consists of seasoned professionals in the fields of public media and media relations, as well as individuals experienced in the creation of instructional and promotional materials and in the direct marketing of ideas to targeted groups.

To generate and sustain press and media interest in the Prize competition, standard media techniques such as the following would, of course, be employed:

- Press releases
- Media alerts
- Op/Ed newspaper and magazine articles
- Appearance on radio or TV/cable talk shows

In addition, while press and media are the most obvious and direct means of generating and sustaining interest among the public, other extremely creative and effective methods would also be utilized.

The long-term nature of a race to the Moon as mandated by a Space Settlement Prize - likely to consume years of sustained effort by the competitors - presents a unique challenge to publicists. Publicity techniques need to take into account both short-term *and* long-term objectives. The standard media techniques such as op/ed articles and press releases will sustain the challenge day-to-day and even month-to-month, but for true sustainability the competition must become deeply embedded in the national awareness.

To help achieve such public buy-in and interest, the Institute would carefully explore techniques such as the following (listed in no particular order):

- Starting weblogs where interested members of the public could post their thoughts, opinions, and observations about the competition
- Developing appropriate course material for public school science class projects related to the challenge
- Creating websites devoted to covering the progress of the challengers
- Organizing fan clubs, associations, and societies revolving around specific competitor teams and around the competition in general

- Creating a system of "sponsorships," so members of the public can financially sponsor a particular team or competitor, or volunteer time and talents; in exchange, sponsoring groups would receive visits, presentations, autograph sessions, and so on from members of the competing teams
- Creating public access to a national, online database of very detailed, specific obstacles and challenges faced by the competitors, allowing members of the public to work on and submit solutions, getting their names publicized in exchange
- Working with existing organizations such as the Boy Scouts of America to develop organization-specific programs that promote interest in the challenge (new merit badges or projects, for example)
- Arranging creative mechanisms for the public to give donations to the competitors of their choice, through websites and even donations at physical locations
- Encouraging the publication of more feature articles in mainstream publications explaining in layman' s terms the many benefits of the competition itself and the benefits of accomplishment of the overall objective
- Working with software developers to create online role-playing or strategy games that parallel the competition concept
- Working with game developers in general to produce board games, playing cards, collectors cards, and other sorts of games and amusements that educate while entertaining
- Encouraging filmmakers from the makers of documentaries to Hollywood moguls to consider creating movies explaining and glamorizing the competitors and their efforts
- Encouraging competitors to invest in creation of self-promotion products, such as decorated pens, coffee mugs, t-shirts, and so on to be distributed to the public or to fan clubs, and so forth
- Providing clear mechanisms for receiving and publishing public input about the competition
- Strongly encouraging competitors to allow public access to spacecraft development and research facilities, such as through tours and other means
- Requiring leaders of competing teams to periodically produce detailed progress reports to be published in public forums such as newspapers, magazines, and so on
- Creating easy-to-understand scoring systems to rate the progress, milestones, and accomplishments of each of the competitors, making the updated scores continuously available to the public - to illustrate who is "winning" in different categories at different times
- Working with legitimate interests in Las Vegas and other locales where betting is legal to create a mechanism for the gambling public to wager on competitor progress
- Creating a national or multi-state "lottery," where members of the public buy inexpensive lottery tickets whose payoff is a guaranteed round-trip seat on a future Lunar flight of their choosing - winners to be announced with a frequency similar to regular lotteries; money generated by lottery to be divided among competing teams for investment in their efforts
- Creating similar lotteries where the lottery winner would receive a significant, guaranteed parcel of land on the Moon from the winning competitor at the conclusion of the competition
- Continually working with individual competitor teams to identify specific obstacles that members of the general public - such as high school science teams - could assist or contribute to solving
- Setting up national competitions among the general public, perhaps including modest prizes, for proposed designs of lunar equipment, habitations, structures, processes, standards, and so on for potential use by the competing teams
- Creating a national network of science students, science and technical professionals, and others of similar interest to participate in solving problems posed by the competing teams

As the concepts above illustrate, publicity will need to go beyond members of the public simply "knowing about" or "following" the competitors and their progress, to a level where the interested public feels *part of* the effort. True buy-in ("what' s in it for me?") is the only real road to sustaining public interest. As a general rule, all of NASA' s challenges must move beyond being mere spectator sports, or interest will necessarily flag during the inevitable doldrums that can periodically plague any long-term effort.

Fortunately, most of the methods suggested above are either low cost or actually pay for themselves. Once a fan club or association is set up, for example, it can be sustained either through volunteerism or membership dues, without much additional investment from NASA. A few ideas, such as the concept of public lotteries, would even be substantial revenue-generators.

To the question of which methods will be the most effective, the answer is - all of them, taken as a whole. Different methods tend to attract or target specific segments of the population. To emphasize a few to the exclusion of others might mean some members of the public get left out. The initial effort would of course be very great, since as with any new endeavor significant sweat equity must be invested before rewards can be reaped. But again, for the methods that are self-sustainable, once the initial effort is complete, maintaining the incentive for the public to remain interested falls on the shoulders of the participants themselves (as with an association), on the competitors (as with providing public access to facilities), on the general public (as with weblogs or the purchase and trading of playing cards), and even on the mechanism itself (as with course materials used over and over by classroom instructors).

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There is not much point in going into too much more detail on these matters, now, until and unless NASA determines it is interested in the land claims recognition concept as the basis for a Challenge, since the Space Settlement Institute would only be interested in working with NASA on that sort of program.

Since, of course, additional Congressional authority will be required, we would be happy to enter into a preliminary Space Act agreement to initiate cooperation and negotiate in good faith towards a comprehensive Space Act agreement to be executed once Congressional authority is secured.

‘The Space Settlement Prize’ would be a farsighted effort to redefine U.S. space policy – while saving taxpayers billions of dollars – by creating an entirely new class of incentive for private industry

Sincerely,

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For more information on this topic, please visit: [the Space Settlement Initiative](#) and/or [The Space Settlement Institute](#).

The following is a first draft of the specific legislation which we suggest that NASA support:

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(Draft of) **AN ACT** (proposed)

To Promote Privately Funded Space Exploration and Settlement by implementing, in part, the President’s Commission on Implementation of United States Space Exploration Policy Recommendation 5-2: “...to provide incentives for entrepreneurial investment in space...” “...by assuring appropriate property rights for those who seek to develop space resources and infrastructure.”

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE

This Act may be cited as "The Space Settlement Prize Act" or "An Act to Promote Privately Financed Space Settlement".

SEC. 2. FINDINGS

The Congress finds that —

- (1) The expansion of the human habitat through the establishment of space settlements is a normal continuation of the age-old human drive to explore and settle unknown territory and will be of inestimable value for America and all mankind;
- (2) Privately financed space exploration and settlement is preferable to taxpayer financing, because the government needs to limit its own expenditures;
- (3) Space exploration and settlement with private financing will produce new tax revenues for the United States;
- (4) A new, additional, incentive is needed because the potential short-term profit sources are currently much too small to attract the billions of dollars of private capital necessary;

- (5) The potential value of land on the Moon, Mars, or an asteroid can provide an additional economic incentive for privately funded space settlement at no cost to the government;
- (6) Prizes such as the Orteig Prize and the Ansari X Prize have an excellent record of promoting privately funded innovation, so Congress wishes to establish a "Space Settlement Prize" to promote the human settlement of the Moon and Mars.
- (7) At some time in the future Congress may be in a position to add an appropriately large monetary award, but, for now at least, the tremendous economic value of land claims recognition should be more than sufficient.
- (8) There is currently no international law on private land ownership in space, because most major nations have deliberately refused to ratify "The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1979, (hereafter called the "Moon Treaty"). The U.S. Senate' s refusal to ratify means that the Moon Treaty' s provisions are not "the law of the land" in U.S. courts, and therefore do not inhibit the actions of U.S. citizens or legislators;
- (9) More importantly, the framers of the Moon Treaty found it necessary to attempt to write a rule forbidding private ownership of land on the Moon, clearly confirming that such an objective had not already been accomplished by "The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies", 1967, (hereafter known as the "Outer Space Treaty"), nor by U.N. resolution GA/res/1962;
- (10) The ratification failure of the Moon Treaty means there is no legal prohibition in force against private ownership of land on the Moon, Mars, etc., as long as the ownership is not derived from a claim of national appropriation or sovereignty (which is prohibited by the Outer Space Treaty);
- (11) Presumably it is only a matter of time until new treaties are negotiated, establishing a functional private property regime and granting suitable land ownership incentives for privately funded space settlements. The U.S. will, of course, abide by such new international law when it has ratified such a new treaty. But, given the urgent need for privately funded human expansion into space, as soon as possible, something must be done immediately, on a provisional basis, to correct the present inefficiencies in the international standard on property rights in space and to promote privately funded space exploration and settlement;
- (12) For property rights on the Moon, Mars, etc., the U.S. will have to recognize natural

law' s "use and occupation" standard, rather than the common law standard of "gift of the sovereign", because sovereignty itself is barred by existing international treaty;

(13) U.S. courts already recognize, certify, and defend private ownership and sale of land which is not subject to U.S. national appropriation or sovereignty, such as a U.S. citizen' s ownership (and right to sell to another U.S. citizen, both of whom are within the U.S.) a deed to land which is actually located in another nation. U.S. issuance of a document of recognition of a settlement' s claim to land on the Moon, Mars, etc., can be done on a basis analogous to that situation;

(14) This legislation concerns only the issuance of such a U.S. recognition and acceptance of a settlement' s claim of *private* land ownership based on use and occupation, regardless of the nationality of the owner, and nothing in it is to be considered a claim of national appropriation of, nor sovereignty over, any outer space body, or any part thereof;

(15) The U.S. does not claim the right to "confer" private land ownership, and the U.S. states it is most definitely not making any claim of "national appropriation by claim of sovereignty, by means of use or occupation, or any other means" as prohibited by the Outer Space Treaty.

SEC. 3. DEFINITION

Private entity: An individual, corporation, or consortium of companies and individuals or a consortium of individuals that is not controlled by any sovereign state or government.

SEC. 4. RECOGNIZING EXTRATERRESTRIAL PRIVATE PROPERTY

(1) All U.S. courts and agencies shall immediately give recognition, certification, and full legal support to land ownership claims based on use and occupation, of up to the size specified in Sections 6.1, 6.2, and 6.3 below, for any private entity which has, in fact, established a permanently inhabited settlement on the Moon, Mars, or an asteroid, with regular transportation between the settlement and the Earth open to any paying passenger.

(2) For a land claim to receive such recognition and certification, the settlement must be permanently and continuously inhabited. The location and the population of the settlement may change, as long as there continues to be an inhabited settlement within the original claim.

(3) Deliberate abandonment of the settlement shall be grounds for invalidating land ownership recognition derived from that settlement, but there shall be no penalty for brief

unintentional absences caused by accident, emergency, or aggression.

(4) Recognized ownership of land under this law shall include all rights normally associated with land ownership, including but not limited to the exclusive right to subdivide the property and sell portions to others, to mine any minerals or utilize any resources on or under the land, as long as it is done in a responsible manner which does not cause unreasonable harm to the environment or other people;

(5) If the requirements of this law continue to be met, all rights, privileges, and responsibilities shall be immediately transferable by sale, lease, or other appropriate means to any other private entity.

(6) As long as the required conditions continue to be met, U.S. recognition documents shall remain valid for 100 years or until the U.S. ratifies a treaty that establishes an international property rights regime which gives comparable reward to privately funded settlement, whichever comes sooner;

(7) The U.S. pledges to defend recognized extraterrestrial properties by imposing appropriate sanctions against aggressors, whether public or private. It pledges never to allow the sale to U.S. citizens of any extra terrestrial land which was seized by aggression. But it makes no pledge of military defense of recognized extraterrestrial properties.

(8) If, after ten years, these limits prove to have been insufficient to get privately funded settlement efforts started, Congress, or some national or international authority it delegates, shall consider whether the maximum size of claims should be enlarged.

SEC. 5. CLAIMANTS' OBLIGATIONS

(1) The claimant must commit to consistently make good faith efforts to promptly offer, or arrange for, safe and reliable transportation to and from the settlement to all, regardless of nationality, who are willing to pay a fare sufficient to cover expenses and a reasonable profit.

(2) The claimant may not unreasonably deny landing rights, and the right to transport passengers and cargo, to any other safe and peaceful vehicle willing to pay a reasonable fee for such landing rights.

(3) The claimant may set appropriate standards of behavior and safety, etc., for passengers and cargo and the use of its facilities, but it may not act in an anti-competitive manner.

(4) If demand for transport exceeds supply, and the claimant is making a good faith effort to increase the availability of transport, it may give preference to passengers and cargo offering the largest financial inducement.

SEC. 6. RECOGNIZED CLAIM SIZE

On Earth's Moon:

(1) The private entity that establishes the first such settlement on the Moon and meets the other conditions of this law shall be entitled to receive full and immediate U.S. recognition and certification of its claim of ownership of up to 600,000 square miles in a contiguous, reasonably compact shape which includes its base.

On Mars:

(2) Given the greater distance, higher costs and larger amount of available land on Mars, the private entity that establishes the first such settlement on Mars shall be entitled to receive full and immediate U.S. recognition and certification of its claim of ownership of up to 3,600,000 square miles in a contiguous, reasonably compact shape which includes its base.

On Asteroids:

(3) The private entity that establishes a permanently inhabited base on an asteroid shall be entitled to receive full and immediate U.S. recognition and certification of its claim of ownership of up to 600,000 square miles in a contiguous, reasonably compact shape that includes its base, or the entire asteroid if its surface area is smaller than 1,000,000 square miles.

SEC. 7. SUCCESSIVE CLAIMS

(1) No entity (nor two entities which are effectively under the same control) shall receive recognition for a controlling interest in two land claims on the same body;

(2) Each successive settlement on a body may receive recognition for a claim of up to fifteen percent less than the preceding one was entitled to;

(3) An entity in control of one settlement may sell services, such as transport, to a genuinely independent entity which establishes a different settlement and makes a second claim on that body.

SEC. 8. CONCURRENT CLAIMS

(1) In the event it cannot be established which of two settlements on the same body was established first, each may claim seven and one half percent less territory than it would have been entitled to if it were clearly the first of the two.

(2) If, in such a case, the land claims of the two settlements overlap, and the claimants are unable to divide the land between them through negotiation, a U.S. court shall allocate the land between the two settlements as seems fitting, before recognizing the claims.

SEC. 9. INTERNATIONAL RELATIONS

(1) The U.S. urges other countries to adopt similar laws, and the State Department is hereby instructed to try to negotiate a new multi-lateral treaty, or bi-lateral treaties with individual like-minded nations, making the same land claims recognition rules into international law.

(2) All rights and privileges conferred by this law shall be available equally to the citizens (individual and/or corporate) of any nation which passes laws or ratifies a treaty offering similar rights to U.S. citizens.

(3) If need be to secure international agreement, the State Department is authorized to agree to treaties which require that all claimants must be consortia which include companies or citizens from several different countries. It can even be required that at least one of the partners in each consortium be from a developing country.