"SPACE RENAISSANCE
A PLAN FOR MOON/EARTH/LAGRANGE REGION INDUSTRIALIZATION"

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ABSTRACT

With a population of almost 7 billion people, our growth on planet Earth is rapidly becoming unsustainable. Problems stem from a shortage of raw materials and a lack of inexpensive and accessible energy. This dearth of resources, resulting into continuous global economic recessions, could cause our civilization to implode. According to Professor Lovelock, the world's population might then decrease to a mere 1 billion or less. This implosion could result in humanity's regression to pre-technological ages.

The only solution to assure continuing growth of our civilization is to open the high frontier, and start surveying the resources of the solar system. Space contains huge unexploited resources on the Moon and asteroids, and can provide abundant solar power. Establishing a foothold off-Earth would also protect humanity from planet-wide catastrophes.

This new space-faring civilization would experiment a true *Space Renaissance*, and catapult us toward boundless economic and cultural growth.

This paper proposes a simple agenda to ignite the Space Economy Revolution: to develop low-cost civilian space transportation, sub-orbital and orbital space tourism, Moon industrialization, and the use of near-Earth asteroids to build space infrastructures. These include orbital stations, industrial settlements and hotels, and hubs for space-based solar power.

The paper also proposes policies to be adopted by governments in order to help the development of the civilian astronautic industry. These policies also extend to private organisations and individuals, space agencies, and financial institutions.

A world wide plan is also proposed, to encourage a broad collaboration on space projects among different countries, and to build Space Renaissance Schools and Academies, to involve, more and more, the youth generations to take part in the greatest endeavour humanity ever faced: the build of a new, post-Copernican, open world philosophy.

We are willing to present this paper at the "D3.1. Strategies and Architectures to establish a Stepping Stone Approach To Our Future In Space" symposium. The paper, new and never presented before, is largely derived from the Space Renaissance philosophical manifesto.

Human growth became unsustainable for Planet Earth

The global economy entered a crisis that is likely worse, for severity and intensity, than the American Great Depression of 1929. For the first time in history, the civilization is facing a global crisis, that strikes all the countries, though with different intensity. This crisis shows clearly that a seven billion civilization cannot keep on developing on one only planet[8]. Things become more and more complex, not because of a moral and social decay, but because we are many people on the surface of a planet that became more and more small and limited in resources. Simple solutions to this problem do not exist: growth is a must, if we want our civilization continue to progress. If the family is growing up, we have to enlarge our home, not to kill our children! Any dream of an impossible "return to nature" is just a dream: seven billion people could never return to nature. Maybe one billion could, but they will also go back to a full animal status, likely, and will never have another opportunity to step to the stars. Our civilization is founded on technology, since the neolitical revolution, and cannot survive without technology. Better, technology is an inalienable part of our culture and of the nature itself, of our civilization. We shall then be able to manage the complexity and mature enough to choose the right direction, in a more and more critical global context. The alternative is clear for the ones who are able to see it: we are facing a nightmare future if the world will remain closed, or a fantastic economic and cultural growth, if we will be able to open the high frontier, and assure to our civilization new space, energy and resources for development[2].

The Earth: A Single Basket For All Humanity

Every human alive lives on Earth: a global disaster of sufficient size will wipe out all of humanity. Although this may seem like an improbable concern, it is not. Here is a short list of threats capable of killing all, or at least a major percentage, of humanity and doing so in this century – i.e., during the lifetime of us, our children, and/or our grandchildren.

a) Natural disasters, like tsunamis, hurricanes, earthquakes, floods, drought, extreme climate change.

b) Environmental decay, either natural or anthropogenic.

c) A major asteroid strike[14][6], such as is believed to have wiped out the dinosaurs. Although strikes of that magnitude are uncommon, they have happened multiple times throughout Earth's history, and could happen again any day. Although there are some efforts to locate and track all of the Near Earth Objects (the comets, asteroids, and other bodies that present probable near-term threats), we have mapped only a small fraction of them and, even if one were coming, we have no capacity to divert it.

d) Biological warfare, whether caused by a terrorist strike, a "rogue nation", or a simple accident. As globally connected as the world is – by way of all the rapid air- and sea-travel linking distant nations – any virulent organism will spread quickly. The recent outbreak of H1N1 (a.k.a. swine flu) in Mexico, rapidly spreading to the US and Canada, is a prime example.

e) "Superbugs." Bacteria and viruses evolve, and quickly. Many diseases are already immune to large classes of antibiotics. A few centuries ago, the Black Death (bubonic plague) spread from the Gobi Desert in Asia to Europe, where it wiped out 25-50% of the population. Although we now have treatments for bubonic plague, new diseases or resistant forms of old ones can always appear.

f) Escalating wars over scarce and dwindling terrestrial resources will not only strain the social fabric of our civilisation but could lead to the catastrophic use of nuclear devices.

Closed vs. Open World

There are two futures before us: the closed world and the open world[3]. We can choose which we and our children will live in, but only if we choose soon.

The Closed World Future

What if humanity maintains its "closed world" view, and never makes the effort to step off into space? What would the most probable future be? Since the planet contains finite resources, and humanity has an exponentially growing demand for resources (most especially energy) there will be global shortages; we are already experiencing the first effects of this. This will compel nations into an ongoing series of conflicts over the remaining resources, with neutral states being dragged into the wars of others.

In warfare, government power and authority goes up, as does people's willingness to "temporarily" give up some liberties. Eroding civil liberties and rising government power combined with a war footing will lead to authoritarian regimes and regression to pre-democratic government models. Under such regimes we have historically seen a retreat from science, technology, and other sources of change, as the regime fears anything that might challenge the status quo.

Lack of resources, plus a retreat from science and technology, will cause damages at all layers: superstition and fully irrational believes will rise again; poor maintenance on existing infrastructure and no construction of new infrastructure; decay

of the education structures, decay of the public attention for common good. A degraded culture will result in fear of the future, increase of mafia and local lordlings, an almost null value of human life, and growing hostility toward women and children, due to the fear of the future. Food, clean water, electricity, and medicine will be in short supply, and we will see a rise in illness and starvation. Natural and environmental catastrophes (hurricanes, tsunami, earthquakes, mudslides, pandemics) will strike with their normal frequency and ferocity but our ability to predict, mitigate or prevent, and clean up after them will be sharply reduced, significantly increasing their damage. Imagine the epidemic that will break out after a major tsunami or earthquake kills a few hundred thousand people in a city of millions, but the survivors lack the means and organization to inter or cremate the bodies promptly.

The economy will enter a continuous crisis, resources will run out, and the distribution infrastructure will collapse. There will not be enough fuel to run the tractors and other machinery, so technology will revert back at least one century. Humans and draft animals will again be needed for farming. There will not be fuel to generate enough electricity for everyone – and so people will once again need to heat and light their homes with wood, whale oil, tallow candles, etc. Without fuel and electricity, cities will progressively die, and long-distance travel or communication will be very slow or non-existent. The level of technology will devolve until it ultimately bottoms out at Neolithic or Bronze Age (as a steel industry requires a level of technology that will no longer be available). Neolithic or Bronze Age technology were not capable of growing and distributing food, let alone to process and distribute energy, for seven billion humans. Billions of people will starve, until the population declines to the point where the carrying capacity of the land can support it.

The true nightmare will be the lack of any hope. As wretched and miserable as the existence of our ancestors was some centuries ago, at least civilization was on an upward trend. In a vertically decreasing trend, no hope in a better future can exist, since the technological know-how would be continuously decreasing, and ideologically blamed. Civilization will implode, stuck at a pre-technology level, with no way to ever again improve the lives of their children.

The above is not dystopian fantasy: eminent scientists such as Stephen Hawking have stated clearly that our civilisation's only hope for survival is to expand into space, soon – as in, within this century[15].

Neither is the above scenario simply restated Malthusian economics. Malthus and Malthusians always considered people just as “mouths to feed”, and never understood the value of human intelligence, and its key role in the cycle of civilian growth through resources crisis. Julian Simon[13] was needed, in order to finally understand that demographic growth is necessary for cultural and civilian growth, and to provide enough resources and energy for true economic and political freedom.

The Open World Future

On the other hand, what would happen if humanity changed our thinking so that “the world” meant not “the planet Earth” but instead “the planet Earth and the rest of the Solar System”?

An unprecedented age of unlimited economic growth will open to human civilization a horizon of development for some millennia to come, for hundreds of billions of the Solar System’s citizens[2]. All of the human intelligences will be useful to develop the frontier infrastracture. Abundance of resources will create the platform for a fully inclusive society, increasing markets and (real, not utopian) opportunities of wealth for everybody[7].

Children will be our most precious treasure, and the future will again be a source of hope and projects. Our ethics will have the possibility to be enhanced, toward a true and full human status.

Culture will benefit from living and experience outside of the Earth’s gravitational well, where transport and structural engineering are much lighter, and new dimensions will be disclosed to human creativity, both in technologies, arts, and commercial enterprises.

In environments (like the Moon) where Man is first, we will create beautiful artificial ecosystems, and finally learn how to control them[9]. This will be of great help for the ones who are mainly concerned about recovering Earth’s ecosystems.

We would treat exo-planetary space as we have every unclaimed wilderness throughout history: people would go there – some for the adventure, some to get away from persecution or to start a new life, and many to make a fortune. We would find that the platinum mines of the 21st century asteroid belts (specifically the M-class asteroids, many of which have estimated values in the trillions) outclass the gold mines of 19th century Alaska a billion-fold. We would use that wealth, that energy, that living space, to improve the lot of every single person on Earth.

Eventually, we would settle in space and have lives there, with whole new cultures developing among people who never have and never will set foot on the mother planet – yet are all part of the wonderful, rich diversity that is humanity.

Even the many people who will never migrate to space will enormously benefit from the human expansion into space, due to the continuously growing economy, reduction or end of conflicts, abundance of energy and resources, and improvement of global social conditions.

Open vs Closed: The Window is Closing

At this stage in our history, Humanity has not time and cannot bear a new, global Middle Ages, hoping for a possible Renaissance after some centu-

ries. Such a future is not possible, since the wastes of a possible implosion of civilization would be too big, definitive, and irreversible[1].

If we have a chance for renaissance, it is now. And it can only be ignited by an “open world” perspective.

If our thinking were “open world”, we would do all this and we would do it quickly. The window into space isn't infinite; eventually, we will have gone too far down the “closed world” path to come back; our scientific programs will have degraded past the point where they can do the required research, our infrastructure will be too decayed to launch the mass required for bootstrapping an exo-planetary infrastructure, and our energy reserves will be too played out to do it even if we had the research and infrastructure. We don't know where the tipping point is, but we know it's soon. For the sake of ourselves, our children, and our grandchildren, we must go into space quickly and whole-heartedly.

It is a wonderful, yet frightening, thought: on the one road there lies a new Solar Civilisation labouring into birth in space, which would improve everyone's lives and drastically reduce the possibility of extinction of our kind, whether from terrestrial or cosmic causes. On the other road there lies a nightmare if Mother Earth does not give birth soon. A pregnancy cannot be carried forever; humanity must allow itself to be born and step out on its own feet to see what the Universe offers.

Space is the answer

For all of the problems listed above, Space provides the answers:

a) Space development has the potential to create millions of jobs and generate prosperity[2].

b) Space resources have the potential to solve our energy and material needs.

c) Space development on a massive scale will significantly contribute to global political stability as it will provide a growing economy and continuously growing markets, and it will require the cooperation and participation of all nations and peoples[4].

d) Space development is the best way to understand the terrestrial and cosmic environment, our role in the Solar System and our place in the cosmos at large.

e) Space technologies facilitate our global communication and transport systems, they allow us to predict and mitigate the effects of natural disasters, they will allow us to understand the ecology of Earth, comparing it with other planetary ecologies.

f) Expansion into space can save humanity from extinction. If we establish permanent, self-sufficient colonies on the Moon, Mars, and the asteroids, it will no longer be possible for all of humanity to be wiped out by a single event[5].

We have reliable, thoroughly proven, technologies that will allow us to extend our economic activities into space and start colonizing the Solar System. Now we need to invest in reduction of the cost of putting cargo and people in orbit. Since the first space race, from Yuri Gagarin's flight to the Apollo flights, we have spent 40 years and hundreds of billions of dollars constructing three space stations – Skylab, MIR and the ISS – but the cost of travelling to orbit remains about the same: $20,000 per kilogram. Two of those stations have since been allowed to burn up, and as of this writing (July, 2009) the ISS is being tentatively scheduled to burn in 2016.

To date, space has been almost solely the province of governments, with only limited access available to private enterprise. It is time to open the high frontier to the engines of free enterprise. Only in this way can we all reap the vast benefits of space – cheap, clean, plentiful energy, material wealth beyond our current imagination, plentiful living space, and more.

Despite being the province of government – which is not known for being profit-focused – profits are already demonstrable from space activities. India, for example, makes a profit on its space programs by exporting Earth resource data and engineering products. This is one reason why the Indian Parliament is willing to countenance Indian astronauts and eventual visits to the Moon.

The Space Renaissance is very urgent; we cannot afford to wait to start working for it[7]. A new, great, renaissance is within our grasp; the decision is up to us, the almost seven billion intelligent beings who populate the third planet of the Solar System. The prize will be a genuinely wealthy, fully inclusive, open society of free individuals and communities – and we can catch this prize in the lifetime of people being born today...if only we reach for it.

The Space Renaissance philosophical roots

If we, the seven billion people that make up 21st century humanity, want our civilisation to keep growing and improving, we must:

A) Complete the Copernican revolution:

   a. In order to achieve the full benefits of space, the cost of travelling to and from space must be drastically reduced. Doing so would create significant new business opportunities.

   b. The growth of passenger space travel will facilitate all other uses of space by significantly reducing their cost. If adequate research and development milestones are met, and greater investment is provided, taking a rocket to space could become as commonplace as taking a plane to a neighboring city.

c. A full-scale space utilization program has the potential to revitalize the global economy and jump-start the greatest economic revolution of all time.

d. The more people fly into space, the sooner our vision of the world will change; many astronauts have stated that simply flying to space and back is a transformative experience.

B) Start thinking and acting beyond Earth's atmosphere:

At a time when every nation on Earth is in dire need of economic growth, the potential for new employment and spin-offs created by commercial space activities should be widely recognized. Resources should be provided to realize this potential.

C) Perform additional research on how to overcome our current physical and philosophical limits:

To enable the full development of a vital space economy, advances in space research and development, especially life supporting systems, must be accelerated and better funded.

D) Settle and industrialize the Earth-Moon space as humanity's first priority.

The resources of the Solar System are nearly limitless, whether measured in energy (clean, renewable, readily harvested), valuable physical materials, or simply space to live and grow. Even a tithe of those resources would allow every person who will live this millennium to enjoy a standard of living higher than any currently available on Earth.

The roots of the Space Renaissance can be traced back to the Renaissance of the 1500s[1]. In that time, civilisation woke up from the long cultural night of the Middle Ages, armed itself with an enlightened mind and new views on the importance of human life, and focused on the development of solutions to human needs and aims.

With the enlightened patronage of such families as the Medicis, an unprecedented new age of development took place: arts knew a wonderful age of innovation, culture took on some essential principles of classical Greek philosophy, and modern science was born, with men like Leonardo da Vinci, Michelangelo, and later on Copernicus and Galileo Galilei leading the way. This movement later led to the Age of Enlightenment and its most famous offspring: the American and French Revolutions and their respective Constitutions; the writings of Descartes, Voltaire, Thomas Jefferson, and other influential thinkers; and the essential belief that:

a) All humans are equal and valuable.

b) Freedom, liberty, and reason must be the basis of society.

c) Political power should reside with the common person, not with kings or nobles.

With the growth of industrialization and of humanity's numbers to near seven billion, the revolutionary boost of the Enlightnement Age came to its end, showing its main ideological limit: the erroneous assumption that the world is finite, bounded to Planet Earth. This assumption has led to centuries of warfare, with nations fighting over resources (sometimes using a thin veneer of religion, political philosophy, or other justification as a fig leaf).

Today, in the 21st century, a quite new vision of the world is needed, thus we call for a new renaissance, a Space Renaissance! The world is not finite, it is not bounded to Planet Earth; during the Twentieth Century space flight took its first halting steps thanks to some enlightened scientists and philosophers such as Konstantin Tsiolkovsky, Krafft Ehricke[11], Gerard O'Neill[10], and others. These men were the fathers of the philosophical current that we call Astronautic Humanism; thanks to them and the ideas they have given us, we live in a season of great progress in science and technology...one that lacks only resources and a unifying vision before it will transform the modern world as the Renaissance and the Enlightenment transformed the old.

We want to focus on humans and their needs and aims again. Our concern is for all of the almost seven billion humans living on Earth today. We care for their aims and for their rights to a better future and living conditions, we want to give them a hope that their children will have better living conditions and, most of all, will have a future – this is our humanism. We think that each human person, wherever born, is precious, since anyone could have the idea or make the discovery that solves some critical problem. Real wealth is not found in money, but in new technologies, new solutions and the potential for work: with 7 billion intelligences, humanity has never been so rich!

A simple agenda to ignite the Space Economy Revolution

Educational Goals

The fundamental element of space development is education, both proactive and reactive.

The huge delay in our technological space program is mainly due to a lack of an up-to-date philosophical upgrade. Philosophy is very much neglected, even in the most excellent international education institutes. To fill this gap, the SRI seeks to create the Space Renaissance Academy[3].

The Space Renaissance Academy, an educational facility to be established by the SRI in collaboration with others, will be created to research and teach a unified vision and philosophy of space, as well as requisite skills, to anyone who wishes to attend. The Academy will devote a sub-

stantial part of its resources to outreach in order to educate the general public in the ways that space development could improve their lives.

The Space Renaissance Academy will research and teach, at least, the following matters:

A) History of: Science, Astronautics, Engineering, Economy, Terrestrial Schools of Philosophy, The Space Arts

B) Space Age Philosophy: Cosmic Ecology, Metaphysics, Ethics, Sociology, Human Evolution, Cultural Anthropology, Systems Theory, New Humanism, Open World

C) Arts and Culture: Astronomical and Astronautical Arts, Music, Dance, Literature, Cinema and New Media Arts, Space and Society, SETI (Search for Extra-Terrestrial Intelligence)

D) Space Sciences & Engineering: Basic and Applied Research, Astronomy, Space Physics, Orbital Mechanics, Exobiology, Space Medicine and Psychology, Space Engineering & Technologies, Space Architecture, Planetology, Outer Space Resources & Energy and its Utilization, Space Agriculture, Robotics, Exploration of Outer Space

E) Space Economy and Law: Space Tourism, Space Logistics, Space Transportation, Space Industries and Services, Space Technology Transfer, Space Based Energy, Extraterrestrial Mining, Industrial Migration, Marketing of Space Ventures, Air and Space Law

F) Comparative Studies: Aero and Space Engineering and Technologies, Human Expansion, Earth and Space Frontiers

G) Business and Quality Management: General and Project Management, Human Resources Management, Standards Rationalization, Process Maturity

The SRI will also commit itself to reactive education – to speaking up against policies that are long-term harmful to space development, explaining why they are harmful, and suggesting alternatives.

Philosophical Goals

The technological space program is 40 years late[4]. But our philosophy is much later: it never completed the Copernican Revolution, and keeps on perceiving Earth's limits as the boundaries of our world. More, we affirm that the human expansion into space suffers such a dramatic delay, properly due to such a huge lack of philosophy and long distance, strategic, unified vision. A wide philosophical elaboration cannot wait.

Furthermore, the growth of the Space Age will raise new ethical and philosophical questions.

SRI seeks to fill the philosophical gap, and to anticipate these questions, by means of the Space Renaissance Academy, developing a Humanist philosophical and ethical system that meets the following requirements:

a) It is based on a new and larger vision of the world as including our entire Solar System;

b) It is inclusive of all humans, both those currently living on Earth and those who will eventually live in the rest of the Solar System;

c) It is a system of knowledge aimed at understanding the cosmic and terrestrial ecologies, and humanity's role in them; and,

d) It provides both a general ethical framework and practical answers to common questions.

SRI does not seek to develop this system in a vacuum; we will be talking in detail with many of the greatest living philosophers and legal minds, as well as studying those of the past. We invite all interested parties to join in the discussion.

Cultural Goals

A Space Renaissance will contribute to a new awareness of humanity's place and purpose in the cosmos, as well as create new opportunities for human advancement and enrichment both on and beyond planet Earth. The SRI considers the cultural dimension of its endeavours an essential component of the benefits that space development will offer to all present and future generations[2].

This task will be manifested through the identification, investigation and support of related cultural, astronautical, humanitarian, environmental, and educational activities which may take place both on and off planet Earth, and which are deemed as beneficial to the development and advancement of human civilisation beyond Earth.

Political Goals

SRI seeks to work with government, private enterprise, financial institutions and the public to create new policies[16] and programs that will:

a) allow for streamlined and responsible investment of government funds into private space-related industry;

b) establish a business-friendly tax climate for space-related companies;

c) establish levels of government regulation on the space industry that are consistent with public safety but impose minimum administrative overhead;

d) create space investment funds to allow a large number of small investors to invest in the future, and to help entrepreneurs and small businesses to develop space,

e) raise public awareness of, and interest in, outer space and space development; and,

f) balance the government investment in civilian vs. military space development,

currently unbalanced in great favour of the military (up to 8 to 1 in some countries).

The nascent space industry needs three things in order to grow: funding, appropriate regulation, and positive public perception.

Many space-related businesses are capital intensive; the best source for large amounts of capital would be government. At the same time, the free market would be the space industry's best growth medium. SRI will seek to resolve these apparently contradictory requirements by working with both governments and private industry to create appropriate policies, legislation, and legal structures.

Finally, no real progress will be made at space development until we can change the current public perception of space as an ivory-tower diversion from real-world issues.

SRI will perform outreach to communities, schools, organizations, and others, in order to communicate this simple concept, that space is an urgent necessity for humanity.

Engineering and Commercial Development Goals

Development of Commercial Markets

SRI seeks to encourage massive growth in the space economy, in terms of the number, kind, and size of space-related companies and in the creation and expansion of new markets.

Examples of near-term-feasible new space-related markets include

a) Low-cost civilian space transportation;
b) Sub-orbital and orbital space tourism;
c) Low-cost space stations and hotels; and,
d) Space-based solar power plants.

These markets have the potential to generate millions of jobs and hundreds of billions of dollars, perhaps enough to turn the currently sagging world economy around[2].

All of these goals can be achieved within the first half of the 21st century.

Creation of significant commercial activities in Earth orbit will logically lead to the use of lunar and asteroidal materials for construction, propellant manufacture, and more. This in turn can stimulate exo-planetary industrialization, including research and industrial settlements on the Moon and Mars, lunar surface and orbital hotels, and asteroidal industrial settlements.

Finally, SRI will be encouraging the development of innovative small-and-medium-sized startups (current examples include Scaled Composites, winner of the 2004 Ansari X-Prize) to address the issue of developing major reductions (20x or more) in cost to orbit, as this is a major gating factor on the size of the space industry.

All of this development could feasibly take place within the 21st century; it is not a pipe dream, it is a very real possibility.

Settlement of Earth Orbit and the Moon

The SRI believes that the most pragmatic way to generate widespread interest in space development is to involve the general public. The more people who are involved in space development, travelling to orbit and beyond, starting new extra-terrestrial enterprises, and forming new ideas on how to solve major world problems, the better and faster the space economy will grow and the world as a whole will improve. To this end the SRI will advocate for, and work to assist in the development of, a widespread infrastructure, targeted to increase the human presence in space; this infrastructure will be assisted by robotic facilities where needed for heavy and dangerous tasks.

This infrastructure will be developed both in Earth orbit and on the lunar surface. Such works should be given a high degree of visibility in the terrestrial interactive media, so that private citizens of Earth may have a direct view of the ongoing exo-planetary activities.

Scientific Goals

SRI seeks to work with governments and the scientific communities to encourage priority be given to research focused on human space flight and missions, especially on overcoming physiological barriers to long term, deep-space living such as on the Moon and Mars.

In particular, this research should focus on life sustaining systems. Encouraging the cross-fertilization from different research fields (e.g. cavitation techniques for water and oxygen regeneration) should be intensified. We should conduct long-term experiments with large artificial ecosystems in a true extraterrestrial environment using the ISS and, eventually, lunar laboratories.

Finally, the International Space Station should be used more intensively. We will work with governments to recommend the ISS particularly focus on exobiology experimentation in an effort to accumulate statistical test data, especially for techniques and methodologies related to protection against radiation and curing of radiation sickness.

Planning

Which concret problems we are facing

If the general tasks listed above are clear enough, not so clear is what a number of volunteers can do, and which objectives are to be considered high priorities. The situation we are facing is more or mess the following one:

a) <u>Negative points</u>
   a. The global crisis is jeopardizing the world economy, and reduces the resources for any activity

b. The problem is always the same, since 40 years: the cost / kg to orbit is too high to allow privates to invade orbital space with commercial astronautical activities
c. Only when many people will live and work out of the Earth gravitational well, the high frontier will really start to develop, because we will start thinking and perceive in a true post Copernican mode
d. The large majority of the public opinion still consider space as a kind of very expensive hobby activity for people who stubborny refuse to "resolve the problems on Earth"
e. The civilization risks a global collapse, if our world will not be open during the next 20 years
f. Governments and politicians are not aware of the character of imperative of the so called space option, since they compete for the votes of the majority, and the majority status is the one exposed at point d.

b) Positive points

a. On the other side, many rich people are looking for new fields of investment
b. Two space activities – considered science fiction up to some years ago – are now considered possible fields where to make profits: Space Tourism and Space Based Solar Power
c. The crisis will likely move huge capitals, the problem is to assure that a good part of them will take the right direction (to the high!)

Noting is to be considered discounted. The new space enterprises could not have resources enough to succeed opening the frontier in time since, as we said, we are in a race against the time.

So what?

We could have enough "Medici" to ignite a new renaissance, but they could not take the good decisions in time.

Politicians generally only follow the public opinion, and very few of them are true leaders.

However, we couldn't claim that the space revolution was ignited by the institutions: institutions usually tend to conserve themselves, and all revolutions in the history was begun from the people. The space revolution will not be an exception. There are no shortcuts at all: there urgently needs to be a large increase in public opinion and awareness.

Public opinion needs a quality jump in awareness

The enterprises which are striving to validate the technologies to abat the cost to orbit shall be supported by public opinion and by governments. A giant coral effort shall take place on this planet, if we want to hope to win the challenge.

The history provides such things (kicks in the ass) from time to time, but they are often horrible strikes: the Chernobyl accident, the September 11th 2001, this awful global crisis.

Sometimes history also provides exciting events: the first flight crossing on the Atlantic Ocean, in 1927; first man in orbit, in 1961; first men on the Moon, 40 years ago; SpaceShipOne at suborbital altitude with 30 M$, in 2004.

We need an exciting, joyful event, a space renaissance event, visible in the whole world. Following that event, the space alternative to the global crisis will be present in all newspapers, all TV news, and will be discussed in all parliaments around the world.

Requirements of the Space Renaissance Earthly Convention

The basic requirements of the event to be organized are the following ones.

Planetary resonance

The event shall be noticed in all countries of Earth.

Space activities promotion world wide

The event shall boost all the space activities in all the space active countries, and ignite space activities in countries not yet interested by them.

Space Education promotion worldwide

The event shall boost the space related education in all countries of Earth, introducing astronautical matters in all existing schools, and promoting new space universities or new local chapters of the existing ones.

Continuity

The first big event shall be followed by many events, in many countries, as an itinerant tour.

Long distance goal

The objective of the Space Renaissance is to hold the Convention on the Moon, as soon as it will be technically feasible.

Personalities and testimonials to be involved

The Space Renaissance Earthly Convention shall involve many celebrities, in different fields, at least:

- Astronauts
- Scientists and Academics both space and non space
- Space Entrepreneurs
- Writers (science fiction and non sf)
- Musicians

- Movie Directors and Actors
- Investors and Venture Capitalists

International Space Station

The inhabitants of the International Space Station will be invited to participate to the Space Renaissance Earthly Convention, via telematic connection.

Space Agencies

All of the Earthly National Space Agencies are warmly invited to support and sponsor the Space Renaissance Initiative, and to help involving the highest possible number of celebrities, in order to assure the largest possible resonance to the event.

Program

The convention program will include, at least:

- A symposium on the industrialization of the Earth-Moon region
- Plenary sessions with speeches by astronauts, scientists, space entrepreneurs, movie directors, which will bring their witness and cultural contribute to the Space Renaissance
- A big concert, held by the participating musicians, a true *Space Renaissance Live Aid*

Schedule

A coarse timing of the project should spread over 8-10 months, giving proper time for finding sponsors, make a proper project design, and develop the project.

Call for contributes and support

The Space Renaissance Initiative calls for support from all the space communities and institutions, for the following tasks:

a) involving investors and collecting funds
b) contacting celebrities and inviting them to participate to the convention
c) participating to the project works

Reference papers and articles

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11. Ehricke, Krafft A. - "The extraterrestrial imperative: Why Mankind Must Colonize Space" - Talk November 1981 New York, last step of a European tour for the Fusion Energy Foundation
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15. A video of Professor Hawking's statement may be viewed on YouTube: http://www.youtube.com/watch?v=HZkyRl5IreM – the specific reference to the need to spread off of Earth begins at 2:00.
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