Space Renaissance International 3rd World Congress 2021

"The Civilian Space Development"

Call for papers Symposium 4 on Congress Theses

Thesis 2 – A strategy to develop the Space Renaissance, towards 2025

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Abstract

This paper tries to give an answer to this fundamental question: "What should the space advocacy community to do, to boost the civilian space development, during the next 5 years?".

According to the analysis in Thesis 1, we will address the main public and private subjects, and the society as a whole. We are aware that private sectors, such as new space and space tourism, cannot make it to trigger the space renaissance alone, without the consent and support of the people at large. Governments, and politics in general term, should give their fundamental support to the private industrial initiative or, at least, not to place obstacle before such initiative.

We know that politicians and bureaucracies only change their strategies and goals after a pressure by public opinion at large. Therefore the priority task of the space advocacy movement – of which SRI is a leading part – is to widen the awareness of the urgency of civilian space development. That means for our congress to design the following strategical items, at least:

1) to define the best arguments and a proper narration, to help normal people to figure out the future of our civilization expanded within the Solar System;
2) to realistically represent the high risk for our civilization to remain closed within the limits of our mother planet;
3) to facilitate the whole space community to discuss and adopt the best strategy to talk to the whole society in all countries of planet Earth;
4) to help young and less young space renaissance leaders to find their way to develop their attitudes and personal heritage, giving their contribute to humanity;
5) since we believe that Space Renaissance International, as an organization, is key in the above process, our duty is to draw the best strategy for SRI to grow up, gaining thousands of members and structuring itself, by means of few well designed programs.

This paper should be used, by the new President, and the new Board that will emerge from the SRIC3 Congress, as a programmatic guideline during next 5 years, towards 2025.

Paper

1 Premises

1.1 Basic Concepts

We move from the following Basic Concepts (from Thesis 1):

BC1. All of the UN 2030 17 Sustainable Development Goals (SDG) are good goals, perfectly sharable.

BC2. The above goals include both civilization risks mitigation and achievement of great opportunities, allowed by the scientific and technological development.

BC3. However, none of the above earthly solutions to global issues (UN 2030 17 SDGs) can work without civilization expansion into outer space, a 18th SDG, to be added.

BC4. Civilization expansion into outer space should be considered priority zero, both to mitigate the global civilization risks and to achieve the best opportunities of economic, social and cultural development.

BC5. Only civilization expansion into outer space (Civilian Space Settlement) can support and make any other strategies sustainable.

BC6. To be started, Civilian Space Settlement needs a strategy, adopted by space faring Countries and possibly by coalitions of Countries.

To provide good answers, at first we need to make the right questions.

1.2 Basic questions

During SRIC3 we will try to reply as much as possible to as many as possible of these questions. However this work doesn't end with the congress: it will be our task, during next five years, to go again and again through these questions, and give more responses, that will help us a better focus and implementation of our programmes.

1.2.1 What is the public awareness about civilization risk and opportunities?

BQ1. What is the degree of awareness, in the public opinion at large, about the necessity to address the global civilization issues and risks?

BQ2. What is the general feeling, in the public opinion at large, about the priority issues and risks to be mitigated?

BQ3. What is the general feeling, in the public opinion at large, about the best solutions to mitigate the global risks?

BQ4. What is the general feeling, in the public opinion at large, about the best solutions to achieve the best opportunities, allowed by science and technology?

BQ5. Is the public opinion at large still interested to progress?

BQ6. What can/should be done, by social-intellectual vanguards, to fire a new interest / confidence in progress?

1.2.2 Which are the probabilities that the essential first steps toward space settlement will be done before 2030?

BQ7. In order the New Space Industry and Market to succeed opening the High Frontier before 2030, what should change -- government's policies, market's development, public opinion orientation, entrepreneurial initiatives?

BQ8. Will the space exploration paradigm "naturally" evolve into space settlement, thanks to the power of the market alone?

BQ9. Is the public support needed or indispensable for the opening of the High Frontier to civilian development? Is it useful but not indispensable? Is it not necessary at all?

BQ10. What are the main obstacles to ignite the civilian space settlement? I.e. scientific, technological, economic, social, political, psychological, ...

BQ11. Is the space research doing everything necessary to support/trigger the space settlement?

BQ12. Are some issues, related to transportation and accommodation of civilians in space, neglected? E.g. protection against cosmic radiations, artificial gravity, low acceleration vehicles, safe re-enter in the atmosphere, green environment in space habitats.

BQ13. If yes, what is the cause of such carelessness? Persistence of the space exploration paradigm? Ideological opposition? Economic interest of lobbies?

BQ14. Do the listed research strands require to be specifically addressed by scientific agencies (such as space agencies)? Or can they be solved by private industry?

BQ15. Does civilian expansion into outer space require international cooperation, or can it be realized by single Countries, in a spirit of cooperation? Please note that we are discussing in full awareness of the extreme urgency to start such a process.

BQ16. Do space advocacy organizations have a key role to support the space settlement's kick-off?

1.2.3 Which are the basic conditions for a sustainable space settlement to develop?

BQ17. How can we kick-off, as soon as possible, a sustainable space settlement?

BQ18. How should a sustainable space settlement be developed?

BQ19. Which disruptive technologies are necessary, for the above goal?

BQ20. Which political decisions are necessary, for the above goal?

BQ21. Which philosophical achievements are necessary, for the above goal?

BQ22. Which political achievements are necessary, for the above goals?

1.2.4 What should the Space Advocacy movement do, to accelerate the space settlement?

BQ23. What is the best strategy, for space advocacy organizations, to accelerate such a process?

BQ24. Which should be our recommendations for governments, industries and other social subjects?

1.3 Background

Giving honest and realistic answers to basic questions 1 to 6, about public awareness of civilization risks and opportunity will give us the measure of the difficulty of our task.

People know that something shall be done, to mitigate the global civilization issues and risks, but don't have any clear idea about the priority issues and risks to be mitigated. Neither exists a general feeling, in the public opinion at large, about the best solutions to mitigate the global risks. The reason is simple: the best solutions are not considered at all, by the opinion leaders, nor by the political powers.

People neither dare anymore to hope achieving the best opportunities, allowed by science and technology. They already saw that the future is going to be worse than the past, and it is hard to say whether the majority of the people is still interested to the progress.

The biggest confusion, in the general public discussion, is about who should make what, in order to mitigate the global civilization risks, such as the risk of implosion, global conflict, catastrophic pollution, climate change, environmental collapse, uncontrolled pandemics. The prevalent narration suggests a passive strategy, summoning that our technological progress is the evil, the ultimate cause of all the global issues: humankind offended "the nature", therefore we should now let nature recover itself, with no regard for human lives to be sacrificed.

In the above anti-human paradigm, it is implied another quite unfair concept: the whole humanity is "guilty", but only the weakest and the poorest humans will pay. That is the selective law of nature: survival of the strongest. **Yet, since homo sapiens achieved their cerebral cortex, the main evolutionary factor is no longer physical strength, but intelligence. Intelligence can inhabit both healthy and strong bodies and weak or poor health ones.** And, since the human society became more and more complex and culturally articulated, the most binding property is social intelligence, i.e. the capacity to use business and cultural creativity not only for own benefit, but for the benefit of whole civilization.

That's why any surrender to the "natural" selection is nowadays outdated, and shall be countered by all democratic means. That applies to vaccination campaigns, that preserve the highest possible number of human lives, including physically weak individuals – who may be endowed by beautiful minds. And it applies to any active strategy targeted to escape the limits of a single planet, became small and narrow, for eight billion of intelligent beings.

The "solution" suggested by prevalent narration is de-growth, deindustrialization, decrease our living standards, and renounce further economic development. We perfectly know that such a "solution" is equal to deprive firefighters of fire trucks and water. But the large public opinion doesn't think so.

Let's take for example the pre-covid main perceived risk: climate change. If ice is going to melt, we will have surplus of water, and the coastal cities will be at risk. The first questions should be: how to protect the coastal cities[1]? How could we profitably use the water surplus? Building dams like in Holland would be the answer[2], not praying and doing penance to the Climate Gods! Claiming deserts would be a good strategy, in order to augment the green surface, improving the global oxygen balance, and the living conditions for the people of those Countries.

The above example gives the perception of the difference among passive and active strategies.

The passive answer to be 8 billion, too many citizens on only one planet, is: "We don't have planet B". The active strategy is: let's go outside, and build up "Planet B"!

The main task of the renaissance's agents is to instill the idea of active strategies, the only ethic humanist ones, vs. passive de-growthist, natural-selective, ones.

In general terms, civilization expansion into outer space will release our pressure on Planet Earth's environment, solve the economic crisis, mitigate the risk of global conflicts, and relaunch at unprecedented pace economic, social and cultural development.

Is all of the above rationally demonstrable? We trust that it is, patiently going through some quality standard methodologies:

- a punctual analysis of the space settlement's stakeholders and of their requirements
- a punctual analysis of the global risks and definition of best mitigation strategies, propaedeutic to development of global opportunities
- design of global strategies and big projects for Space Settlement and Earthly active strategies, derived from the above stakeholders' requirements
- marketing oriented strategies, based on the new communication means and standards

2 The Space Renaissance main strategy and programmes for next 5 years

2.1 Space settlement: analysis of stakeholders' requirements

Any space activist found themselves several times discussing with people saying things like these: "we are not mature enough to go to space", "before going outside, we should evolve our culture, in order not to export our bad social and environmental habits". Such arguments seem reasonable and common sense. But they are not. Once again they exchange causes and effects. When we talk about civilian space development we simply mean that we want all of the normal earthly activities to be progressively exported in space, on the Moon, on orbital infrastructures, on Mars, on the Asteroids and beyond. Should we wait until all humans become saints, before moving to space? Especially considering that, remained confined within a closed world, the psychopathologies (criminality, mafia, slavery, wars, etc...) will percently increase, and not fade out…

However it may be worth making an effort to capture the requirements for a sustainable space settlement. Defining an agenda, identifying steps, what is to be made before and what later, when, how, with which means, with which priority, with which recommendations. Trying to identify ethical principles is never a waste of time. Will the pioneer settlers listen to our recommendations? We don't know! However, better to go than to hold, waiting for agreements when they are requiring a too long time that we don't have, or simply not possible… Especially considering that often struggling to affirm some principles is the main obstacle to doing the needed things.

As Elon Musk is teaching, by he's restless development of the Starship, the quality of imperfect thighs, when done, can always be improved. Quality of undone things can never be improved!

2.1.1 Human species

Human species is experimenting shortage of several assets, all of them necessary for any life to survive, grow up further and evolve.

For its survival, humankind needs enough food, fresh air, fresh water. Food resources on Planet Earth are now short, both on the ground and in the sea. Intensive farming is poisoning the environment with huge methane emissions, and deforestation. Since several years the fishing industry is experiencing a shortage: the quantity of fished is less than the market demand. Moreover, the pollution of the sea is compromising the quality of the product itself.

The conversion to vegetable food, advocated by many, would not solve the problem, yet to worsen, since extensive cultivations would require a deforestation likely bigger than the one required by farming.

The pollution caused by our big number in a closed environment poses many threats to physiology and health, both physical and psychological. The quality of the food, while the Earthly science strives to multiply the products quantity, is decreasing, since the basic availability of the raw materials is not growing.

In the cage of the closed world, our species can no longer grow up. Neither it can evolve: while the evolutionary factor, for a cultural species, is intelligence, the closed world environment favors the raise of backward factors, such as physical strength and arrogant supremacy of the strongest individuals over the physical weak ones.

Human species is therefore the first stakeholder, that will get profit by expanding into outer space.

2.1.2 Human civilization, economy, culture

While humanity, as a species, could maybe survive to a giant holocaust, caused by a global social implosion, civilization – the construction built by the growth of human culture during the millennia, called civilization -- would not survive.

One billion humans could maybe survive to a civilization implosion, but they would be rejected to the dark pre-scientific and pre-technological ages. Their prevailing sentiment would be against science and technology, which will be seen as guilty of having destroyed the world. The even concept of progress would be canceled by their mind, for who knows many centuries.

Civilization, and its basic foundation assets – such as economy, ethics, freedom, democracy, wealth – need growth, and industrial development. The only sustainable industrial development is currently outside Earth, using the immense resources of asteroids, moons and planets of the Solar System.

In order to retake the road to progress, civilization needs to expand into outer space.

2.1.3 Young generations

Young generations are the natural main stakeholders of civilian space settlement. They are also the main addressees of our whole activity, as a space advocacy organization.

It is our duty to deliver them a better future, with respect to our actual conditions.

A better future is not only a cleaner environment on Planet Earth, though this is of course part of the job.

A better future includes, at least: better social conditions, the social elevator working again, resources and energy enough for restarting the civilization to grow up.

As we wrote on many papers and articles[3], and re-actualized in our Thesis 1 document[4] for SRIC3, none of the above conditions can be attained without expanding civilization into outer space.

2.1.4 Humanitarian organizations

Though the space advocacy organizations so far didn’t dedicate any attention to this sector, humanitarian organizations are “natural” allied of the space advocacy movement.

SRI will make its best, during next 5 years, to contact the main humanitarian organizations, such as, e.g., Emergency, Doctors Without Borders, Sant'Egidio, Save the Children, UNICEF, and others, proposing them, at least:

a) agreements of mutual promotion and support

b) joined public events, to discuss how civilian space development might contribute to solve global problems as famine, unemployment, underdevelopment

c) joined initiatives, to promote membership to SRI and the partner organization

2.1.5 Nature, life and sentient species of Planet Earth, and our deep responsibility and interest as part of it

No doubt the Planet Earth natural environment would immensely benefit from humanity expansion into space.

We're not speaking, in this case, about the Earthly environment to sustain human life and culture, but about nature in itself. It is worth to remind that vegetal life represents 97,3% of the whole life on this planet. Animal life represents 2,7%, and 0,01% is homo sapiens total score[5].

Planet Earth's vegetal environment was a beautiful, though often hard, incubator for the birth and growth of animal life and intelligent life. The latter developed in a short time, vs. the long history of life on Earth, and is now threatening the very existence of many other natural species.

We, humans, don't know, of course, what is better and what is worse, for nature in itself: we could (maybe) just be able to say what is better and what is worse for our species and our civilization. It is however easy to understand, at least, the following things.

1. While nature takes time in the range of million years to develop species through natural selection, we are accelerating the extinction of a huge number of species, by our development, in few centuries.
2. The above fact could be not "wrong" from the evolutionary point of view, since in nature the only constant principle is change, and dominant species continuously win over weaker ones: humans, as a dominant species, is not an exception.
3. However the accelerated extinction of so many species is deeply wrong from the point of view of our humanist compassion, and responsibility, for all sentient beings.
4. We still have many things to learn from the study of nature, therefore loosing so many species is undermining our capabilities to understand natural processes and the way natural ecosystems works.

It is therefore in our interest, and part of our moral responsibility, trying not to cause accelerated mass extinctions and a too quick change of the natural environment of Planet Earth.

We can say therefore that the natural environment of Planet Earth is one of the main stakeholders of civilization expansion into outer space.

2.1.6 Earthly life sustaining environment on Earth and outside

Humans were represented in different ways by different ideological biases. For us humanists intelligent life is the highest expression of life. For extreme ecologists, humans are parasites, or, in the most tolerant case, a symbiote of Planet Earth, as a living organism.

Now, a symbiote doesn't have any interest in killing its guest!

To use a literary example, we wouldn't like our Planet Earth to be transformed in a 100% artificial world, like Trantor, the planet capital of the Galactic Empire narrated by Isaac Asimov in several novels and then in his Foundation trilogy[6].

Opposite, we would like to make of Earth a beautiful natural garden, a kind of "earthly paradise", a model of life sustaining environment and optimal climatic conditions, to allow both many natural species to survive and beautiful location for the people of Solar System to visit and spend wonderful holidays.

Such a model will also be useful as a living reference for artificial ecosystems designers, while reproducing the terrestrial biome in other natural and artificial environments in the Solar System.

2.2 A sustainable global expansion into outer space: which strategy, when, how, with which means, with which priority, with which recommendations.

2.2.1 A Global Expansion Paradigm

A mature strategy should move upward globally[7]: when an outpost infrastructure has been established at a certain level – e.g. Earth Orbit –, a goal to move to the next level can be set, but keeping the built infrastructure level alive and operating. Leaving behind it all the suite of capabilities necessary to maintain human beings on that infrastructure, with a development and maintenance costs so low that it will be credible that other private customers will join the venture.

A shift in the mission requirements is needed as well. Every systems shall be designed upon civilian users requirements, no longer upon military trained astronauts. That will make life in space easier not only for civilians, but for astronautic personnel too.

2.2.2 Directing electronic energy to the real human power, to implement the Civilian Space Development

The world is learning, in the most hard way under the attack of pandemics, that electronic money is going to allow an increasing very larger freedom of choices, vs. the old monetary systems, based on material goods and material currencies.

Financial leaders have now the power to – literally – direct energy towards selected projects. Financial powers of Planet Earth are for the first time using monetary leverage to generate capitals, in order to react to global emergencies. The next step should be the capability to identify great active strategies, and to direct generated capitals, electronic energy, to develop projects in the frame of such strategies.

There's nothing impossible, as far as we have 8 billion, and growing, intelligent and creative humans: this is the real power, only waiting for proper (electronic) energy to be activated.

2.2.3 A feasible road-map to space settlements within 2030

A feasible road-map to space settlements within 2030 includes at least the following steps:

STEP	ACHIEVEMENT
1) To define a strategy and some feasible goals. The need of a strategy was efficiently discussed by Jeff Greason in 2017[8]	

STEP	ACHIEVEMENT
2) Developing low cost fully reusable orbital vehicles	Cost for one person to orbit < 1 million
3) Giving proper priority and developing some enabling technologies for untrained civilian space workers to travel, live and work in space, e.g.: vehicles endowed by smooth acceleration, safe re-enter into atmosphere, protection from space hard radiations, artificial gravity and green environment in habitats	More civilians allowed and secured to live and work in space
4) Development of suborbital tourism	Enlargement of space market and space industry
5) Development of proper insurance and legal responsibility, extension of civil rights in space	More civilians to travel and work in space
6) Civilian space development in Earth orbit: debris recovering, orbital tourism, satellites and spacecrafts assembling and maintenance	Raise of space economy, increase of investments
7) Developing capability of fuel production from Lunar and asteroid mined resources	Cost of any mission beyond Earth orbit lowered at 30% of previous cost
8) Establishing fueling stations in Earth orbit and Cislunar space	
9) Establishing information network in the Cislunar region	
10) Building Lunar industrial settlements for mineral extraction, such as helium 3, regolith processing, etc…	
11) Building Lunar research settlements, such as astronomic telescopes on the dark side	
12) To start exploring and settling Mars, as a logistic pole towards Asteroid Belt and the external Solar System	

When the above steps are well routed, the space settlement, as a social process, can be considered underway.

The main necessary development includes the enabling technologies for transporting and accommodating civilians in space. As to such respect, space tourism can be considered an intermediate transition stage: since tourists will remain in space for short periods, the life and health protection requirements are more severe than the ones of space exploration, but lighter than the ones of space settlement. That's why the space advocacy movement should never stop sustaining the effort of the few space tourism enterprises, and never stop giving public outreach about their fundamental social role.

Further steps will include development of a massive industry for Near Earth Asteroids mining, the development of Mars and Mars orbit and beyond, to the Main Asteroid Belt and then the Jupiter Moons.

On each reached expansion level, it will be key to establish and consolidate the infrastructure, in a strategy of global expansion.

The development of possible new disruptive technologies in the field of propulsion – such as nuclear fusion aneutronic propulsion or VASIMR plasma engine -- will further boost the space settlement.

2.2.4 Classification of different Mission Requirements

A useful angle of view on the strategical roadmap is classification of mission requirements, as they will develop, along the transition between two paradigms: space exploration and space settlement[9]. An excerpt from the paper "Expand or die", published on Global Risk Reduction Special Interest Group, a SIG within US and International Mensa.

"Summarizing, what we need is a substantial advance in a series of enabling technologies for civilian space development. For example:

Passenger Transportation Systems:

- low cost, fully reusable
- comfortable
- low acceleration, in both directions
- safe reentry into the atmosphere
- horizontal take-off and landing
- protection from solar & cosmic radiation

Space Habitats:

- protection from solar & cosmic radiation
- artificial gravity
- green environment onboard

All of the above was conceived as the result of the humanist philosophic setup of our Space Renaissance International association. When developing our concepts we always start with humans: their rights, their health, their life, and their hopes for a better future. We work to allow people's lives to become better, not worse! There is no doubt that traveling and living in space like astronauts would be quite a poor life. An astronautic experience could be exciting, of course, if it is for a short duration. That's the point where space tourism comes in. Space tourism is an intermediate stage, between astronautics and resident space citizenship. Space tourists will stay short periods in space, perhaps a week, or at most a month. Therefore their physiology will not be dramatically endangered by low gravity, though cosmic radiation could be an issue even for short periods. However, when flying with vehicles conceived for astronauts, tourists will need to be trained, in order to tolerate 4–5 G acceleration, vertical launch vibrations, and the hard onboard conditions. Elder people couldn't go, just to mention one important limitation, considering that retired people are the most keen to travel for tourism."

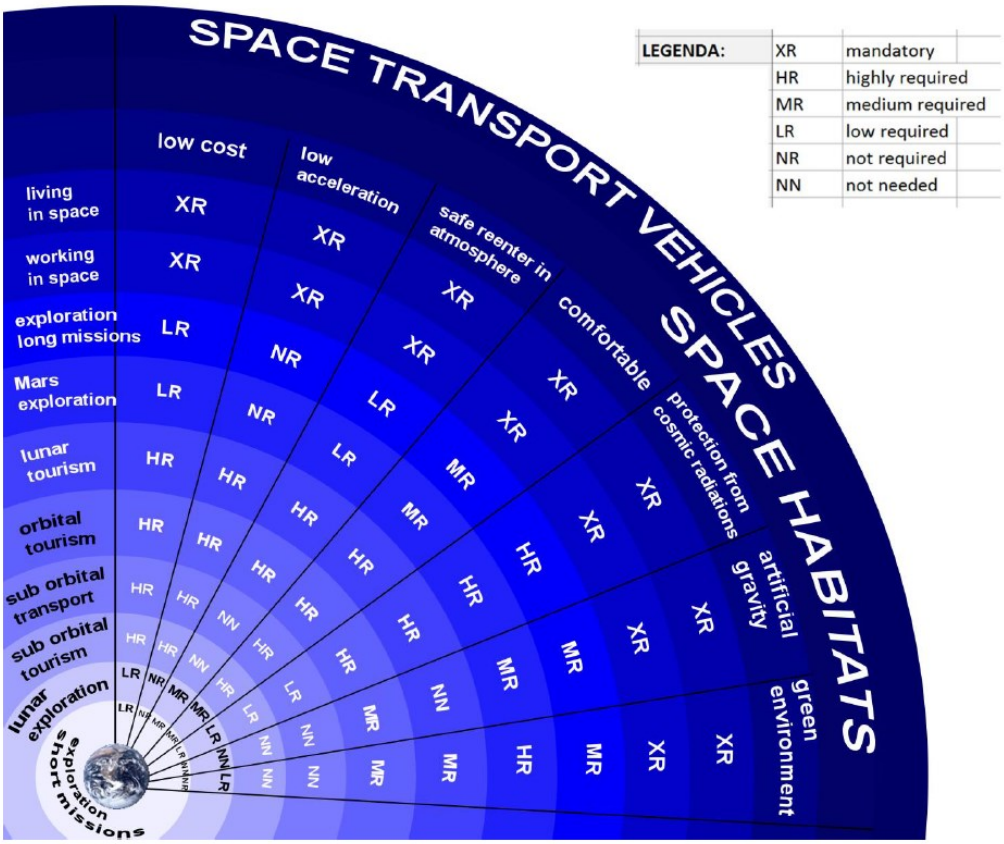

Figure 1 A classification of mission requirements, from space exploration to space settlement

2.3 Methodology

We are sketching here a methodology to be adopted by SRI, but also proposed to the space advocacy movement at large.

What makes the difference? Our main methodology reference is Elon Musk, since he has a vision and a strategical goal: to make humanity a multiplanetary species. That makes the difference, vs. the traditional aerospace.

We have a vision and a goal too: expand civilization into outer space, to kick off civilian space development as soon as possible.

Elon's mean is industry. Our mean is public outreach and education.

We'll do our best, during the next 5 years, to practice our methodology, and to propose it to other sister organizations.

2.3.1 Managing complexity and reaching simplicity

Many times, in our history, we witnessed a discussion among the supporters of two apparently alternative setups:

a) **An approach oriented to deep philosophical elaboration**, conducted by means of conceptual long enough documents, books and discussion

b) **An approach oriented to simplicity**, mainly targeted to attract a large audience

An obvious consideration is that we cannot make it without a large audience, that will never read long documents nor books. SRI needs a large audience more than everything else.

However, in order to reach the required level of simplicity, we need to go through complexity and sort out our concepts.

Before communicating simple concepts to large audiences we need to elaborate the complexity, and the discussion on the congress theses represents such an elaboration. From our serious and long theses documents we will then distill simple messages, newsletters, articles and recommendations. We cannot start from simplicity, first we have to go through the complexity. A hard work? Yes, but we are a philosophical association. It's our task.

Definitely, we need two levels of presentation and publications.

1) **Detailed documents**, representing the core of our understanding of the civilization status, construed as coherent and as much as possible conceptually complete academic documents. Such documents are not meant to be articles, newsletters or agile leaflets for large presentation.

2) **Simple texts** and outreach materials for large publication, "sexy" enough to attract many people.

Our discussion and works shall be mature enough and never deny any of the two above needs and related requirements. Each time that somebody denies the need of level 1 or 2 makes our works a step backward.

As we live now in the age of electronic communication, we are not forced to choose among (and give priority to) different types of printed publications, as it was the case some decades ago, when organizations, with limited financial powers, often had to choose among a more conceptual magazine and a more popular newspaper. We can do both, using network tools and channels.

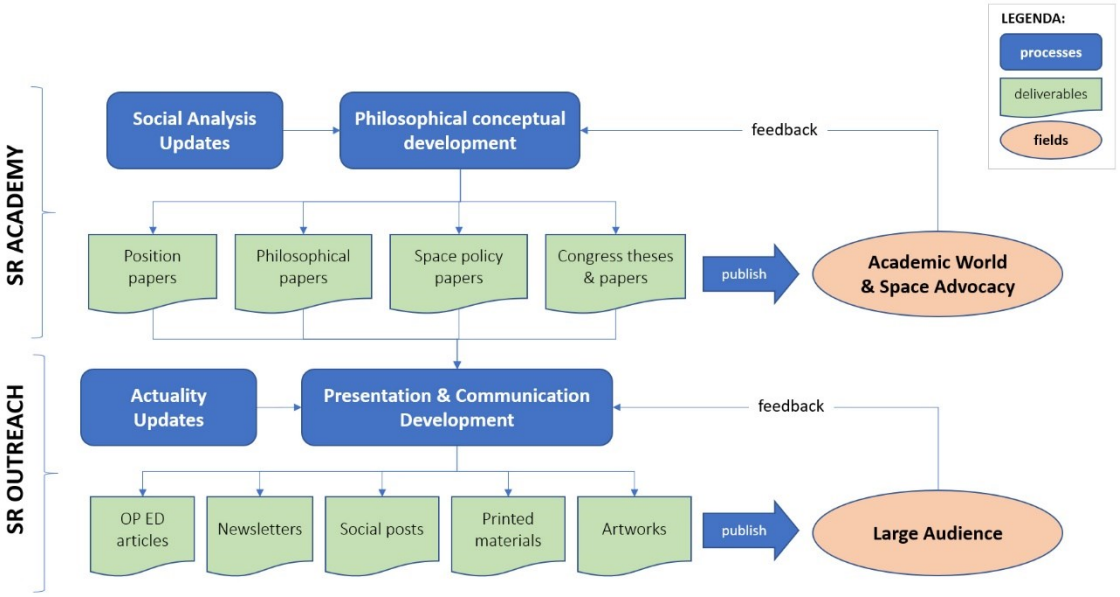

Figure 2. The Elaboration & Communication WorkFlow

Measurement KPI's for the two levels will be:

a) For the academic level: number and quality of contacts and partnerships in the academic world

b) For the large audience: number of SRI members achieved, and number of followers achieved on social networks

2.3.2 Understanding how different social subjects can support Civilian Space Development

We also need to identify the best ways in which different social subjects can contribute to the kick-off the Civilian Space Development: private industry, governments, international competition and collaboration, space advocacy organizations.

Such activity shall be continuously developed, by frequent actualization of our social analysis, comparing it to our defined goals and strategy. Position papers and outreach materials will come after the outcomes of such activity.

2.3.2.1 Private industry

Private industry is the main engine of Civilian Space Development. None of the things we say would be possible, without Space X, Blue Origin, Virgin Galactic, just to mention the three main new space industries.

They should be supported, in order to continue their fundamental effort.

2.3.2.2 Governments of Planet Earth

Governments are strongly recommended to support the new space industries planet-wide or, at least, not to hinder their efforts.

SRI will do its best, during next five years, recommending governments of Planet Earth, to:

1) support the new space industries by all of their capacities: fiscal discounts, grants, public investments, promoting programs of private investments such as space investment funds
2) to promote the development of technologies enabling the Civilian Space Development

2.3.2.3 United Nations

United Nations, and its space office UNOOSA, could play a key role in promoting the Civilian Space Development to all the >190 Nations subscribed to UN. The main problem is that the UN's 17 SDG's for 2030 don't include the concept of Civilization expansion into outer space.

A restless campaign will be conducted towards UN, to convince them to adopt an18th SDG: to bootstrap the Civilian Space Development before 2030[10].

2.3.2.4 Space Law and regulations

The space law institutes should accelerate their work, with the following goals:

1) To extend civil rights in space, and protect them
2) To assure human rights to be respected and enhanced, in space
3) To protect investments in space
4) To provide rules for fair competition and collaboration in space
5) To provide rules for the extension of usual earthly human civil activities in space
6) To allow use and exploitation of extraterrestrial resources, namely from asteroid mining
7) To allow private use of extraterrestrial ground and resources on celestial bodies
8) To provide a sustainable legal system, sufficient to allow civil insurance companies to work in space
9) To harmonize all of the above with the existent space legal system – the Outer Space Treaty – and eventually to change it according to the ongoing commercial space development

2.3.2.5 The space advocacy movement

The space advocacy movement is warmly recommended to discuss with SRI, and possibly accept to campaign with us on few shared goals, at least:

a) The extreme urgency to kick-off the Civilian Space Development, before 2025
b) The extreme urgency to give higher priority to the development of technologies enabling the transport and accommodation of untrained civilians in space for long time periods, towards residence
c) The extreme urgency to define a shared Strategy for Space Settlement, to be promoted and lobbed in every situation where it can make the difference
d) The extreme urgency to accelerate a shift of paradigm, from Space Exploration to Space Settlement
e) The extreme urgency to start removing and reusing orbital space debris
f) The extreme urgency to kick-off Earth orbit and Cislunar industrialization

SRI will be ready to sign agreements even on subsets of the above goals, with whoever will be ready to share them and work with us for their achievement.

2.3.3 Refocusing our volunteer work

In Space Renaissance International we are all volunteers.

That doesn't mean our work should be optional, and that commitments should only be kept when possible and if possible.

Our association is not a club, where to practice our hobbies, if and when we have time.

Subscribing to join the SRI Crew, each new member is kindly expected to declare whether he/she is available to contribute some hours to volunteer activities. New members are free to say NO, and they will be however very much appreciated for their financial contribute, and their possible public sustain, if and when such an opportunity will manifest itself.

We should enter the order of ideas that, when we commit to volunteer activities, we are making a commitment, a voluntary one, that's even more important than a commitment in exchange of a salary.

That means that we will have to be very much serious and accurate, when we will decide:

1) which activities we can dedicate some hours to,
2) how many hours per month or week we can dedicate to the SRI selected activities.

Of course the above can change, during the time, due to changes in our time availability.

However, each volunteer, when accepting an action item, should decide him/herself the deadline, and be sure he/she can reasonably fit the commitment.

As any program manager knows, there's nothing more frustrating than to see action items become overdue, and nothing to happen. A program manager in such situation feels very bad, having to decide whether to solicit or wait…

An action item executor, in case of delay, should reschedule the deadline, and inform the program manager.

The diligent and spontaneous observing of such simple rules is key, to maintain an optimist an proactive collaboration on agreed projects.

2.3.4 Internal organization

To define exactly the role and tasks of: the SR Academy, the SRI President, the SRI Executive Director, The SRI Board.

To better define our voluntary activities and the way in which voluntary activities are carried out: we are not paid, but this does not mean that the activities should be optional. Clarity and honesty about commitments are essential. Without these habits the association will not grow up, and the president will drive toward a nervous breakdown…

In order to make all of our Goals really sustainable, we need to have a Programme Manager for each programme.

2.3.5 SRI presentation and communication

To improve the presentation and communication of SRI, making it more appealing and attractive to young people, expanding our audience from thousands, hundreds of thousands and millions.

To achieve a professional newsletter service, to reach million people, planet-wide.

To organize broad public initiatives, asking people to nominate, e.g. the best space actor, the best space movie director, the best space movie, the best space book, etc…

The SRI presentation and communication system will be redesigned, with the goal to make it more attractive for large audience. Here's an essential program.

- Website Requirements
  - Gain new members
  - Keep members involved
  - Provide activities/events people would be interested in
  - Outreach to sponsors
- Appearance
  - New Messaging - "the organization should paint a picture that people can see themselves in"
  - Updated look and feel
  - Make mobile friendly
  - Make it simple and fun.
    - Appealing and modern look and feel
    - Create areas for different age and educational levels
      - Aggregate related content: Videos, Images, Articles
  - Subscribe/Donation should be in currency of country user is from.
- Messaging
  - Identify clear long term goal
  - Identify short term goal(s) that members can understand and be part of.
  - Change the very academic & erudite feel
  - Segregate technical info from public information
- Make relationships with key organization / institutions (outreach)
  - Planetary Society, NASA, SpaceX, Virgin Galactic, Blue Origin…
  - Princeton, MIT, CalTech, CERN, Embry Riddle…
  - Local schools
- Social media
  - Consolidate social media presence
  - Integrate news to social media
- Newsletter
  - Find a serious professional service to build a planetary wide newsletter mailing list in the order of millions

2.3.6 SRI Membership continuous campaign

Significantly increase our Membership, by achieving hundreds of thousands of Space Renaissance leaders.

The above to be achieved by the measures foreseen at 2.3.5 and by a dedicated membership program manager.

2.3.7 Strategic alliances

To develop alliances at planetary level with sister associations, research institutes, a close collaboration on shared objectives.

In this regard we need to define well the levels of partnership and sharing, clarifying what our partners adhere to, when they adhere to some of our proposals.

2.3.8 Sharing the same time planet-wide

During the pandemic time, we increased very much the practice of remote meetings, using platforms like Zoom, Google Meets, and others.

The organization of such meetings presents an issue: to find optimal time for meeting across the five continents. Sometimes it is not possible to avoid somebody to stay awake during the night.

However, SRI needs to adopt a unique time, so that it will be easy to refer for everybody wherever they are: the Universal Time Coordinated (UTC), that corresponds to the Greenwich Mean Time (GMT).

All of our meetings, both internal and public, will be announced and referred in the UTC time, in the system of 24 hours/day. That means, for instance, that 4pm UTC will be noted as 16:00 UTC, midday will be 12:00 UTC, and midnight 24:00 UTC.

Hereafter a sample of time correspondence in some locations (summer daylight saving time):

UTC	UK	CET (+)	Israel (+)	India (+)	Japan (+)	Australia (+)	US EDT (-)	US CDT (-)	US PDT (-)	Hawaii (-)
difference:	01:00	02:00	03:00	05:30	09:00	10:00	04:00	05:00	07:00	10:00
16:30	**17:30**	**18:30**	**19:30**	**22:00**	**01:30**	**02:30**	**12:30**	**11:30**	**09:30**	**06:30**

Our time calculator can be downloaded here:

https://spacerenaissance.space/wp-content/uploads/2021/05/Planet-Earth-Times.xlsx

(just change the time in the blue cell, and the other times will change according to their time difference wrt the UTC).

2.3.9 General programming and measurement

A general program and time scheduling will be defined, during the first 100 days after the Congress, to allow a coherent development of the agreed programmes and priorities.

Proper shared tools will be established, such as a dashboard spreadsheet to keep track of action items.

Proper KPI (Key Performance Indicators) will be defined, and proper verification/measurement procedures will be established, to be periodically executed with the following goals:

a) Verify the reached milestones and the possible delays

b) Assess correction actions when needed

c) Implement reprogramming and rescheduling when needed

2.4 Refocusing the SRI mission for next 5 years

Our strategic mission, towards 2025, is to promote planet-wide efforts for the Civilian Space Development, i.e. developing the enabling technologies as described above in this document and in the Thesis 1 document.

The SRI priority programmes are refocused hereafter.

2.4.1 The Space Renaissance Medici Fund

We will pursue the SRI strategic mission by means of our outreach, and by means of the Space Renaissance Medici Fund.

The SR Medici Fund, during the next 5 years, shall be developed to the magnitude of millions.

The SR Medici Fund will proceed through two main phases.

PHASE A) Mainly targeted to help students to find their way toward space, and to educate Space Renaissance leaders, strongly rooted on astronautic humanism concepts.

PHASE B) In addition to phase A items, the Medici Fund will be targeted to companies, startups and research groups having in their mission the development of technologies enabling the Civilian Space Development and the Space Settlement.

A threshold for passing from phase A to phase B to be defined, after assessment of one year of activity, at least.

2.4.2 The Space Renaissance Academy

To bring the Space Renaissance Academy at a higher academic level, developing, at least:

a) the Mentorship Programme, which goals are better described below

b) the general Education Programme, which goals are better described below

c) prizes and bursaries for students and researchers, by the Medici Fund

To develop partnership with the main Space Universities of Planet Earth.

2.4.3 The Space Renaissance Mentorship Programme

To develop the Mentorship Programme:

a) completing the list of Themes for Graduation Works and defining the statement of work of each graduation theme,

b) to consolidate the relationship with the persons who gave their availability to be Mentors, defining the terms of their collaboration, by means of a standard mentorship agreement,

c) promoting the SR Mentorship Programme in all the Universities world-wide, also signing agreements with Universities.

2.4.4 The Space Renaissance Education Programme

To develop our Education Programme, in the frame of SR Academy.

The general education programme, including: philosophy, history of the renaissance, history of astronautics, history of science and scientists, humanism, astronautic humanism, ethics and

morals, industrial society, arts, futurism, futurology, science fiction, human rights, factors of development, frontiers, quality.

Courses on Astronautical Humanism, New Space, New Development Philosophies, and others.

Identifying and partnering with teachers and lecturers.

A SRI Yearly Campus, to be defined and organized, to form the Space Renaissance Leaders.

2.4.5 The Space Renaissance Research Programme

To develop our Research Programme, in the frame of SR Academy.

Evolving astronautic humanism, social analysis, global risks assessment, civilization progress opportunities, strategies for space settlement, ethics, concepts, positions.

Studies on promising scientific and technological developments

2.4.6 The Civilian Space Protocol

To retake the work on the Civilian Space Protocol initiative.

To deliver the recommendation letter to the +190 Governments.

To hold conferences in every Country where possible.

2.4.7 The Space Renaissance Art Chapter

To be developed, with the following assets:

- Facebook group (already active)
- Dedicated website https://art.spacerenaissance.space/

In collaboration with SR Academy

2.4.8 SRI toward United Nations and the UN subscribed Nations

SRI to become an accredited observer at United Nations.

Political action towards all Governments of space active Countries and emerging Countries that want to develop space policies (the Civilian Space Protocol).

Contents

3 References

[1] Kim Stanley Robinson – “New York 2140”, an example of passive strategy on climate change https://www.amazon.com/New-York-2140-Stanley-Robinson/dp/031626234X

[2] Dan Cortese - “The Sea Wall That Saved a Nation” https://www.theb1m.com/video/the-sea-wall-that-saved-a-nation

[3] Space Humanism – Papers & Fragments https://spacerenaissance.space/documents/papers-fragments/

[4] A. V. Autino, et Al - “Thesis 1 – Status of Civilization and perspective of expansion into outer space, The status of civilization approaching the threshold of 10 billion Earthers on one only planet” , paper presented at SRIC3 4 Symposium on the Congress Theses 4.1 Congress Thesis 1 – Status of civilization and perspective of expansion into outer space.

[5] Stefano Mancuso - “The Nation of Plants”, March 30 2021 https://www.amazon.com/Nation-Plants-Stefano-Mancuso/dp/1635420997/

[6] https://en.wikipedia.org/wiki/Galactic_Empire_(Isaac_Asimov)

[7] A. V. Autino, et Al - “A gas strategy for space settlement”, paper presented at SRIC3 Symposium on Space Philosophy and Outreach, 3.1 A conceptual timetable for the founding steps of Space Settlement – June 29th

[8] Jeff Greason - “ISDC 2017 Keynote Address A Settlement Strategy for NASA”, Youtube video https://youtu.be/KeSyBdqCAlc

[9] A. V. Autino - “Expand or die” published on Global Risk Reduction Special Interest Group, International Mensa. https://spacerenaissance.space/wp-content/uploads/2020/07/EROSM72K.pdf

[10] The Civilian Space Protocol is an initiative promoted by SRI, and subscribed by 15 organizations world wide https://civilianspaceprotocol.space/