



IN THE MIDST OF TRANSITION

September 2022 – We are witnessing an **epochal transition, from traditional aerospace to the new space economy**. This evolution roots back to 1996, when Gregg Maryniak and Peter Diamandis launched the X-Prize. ScaledComposites won the competition in 2004: SpaceShipOne reached a 100 km altitude twice in one week, spending only \$30 Million. Low cost access to space was demonstrated. Elon Musk's SpaceX, a company emerged during that enthusiastic race, bootstrapped **the age of reusable rockets** in 2015. Such giant technological leap brought to a meaningful downsizing of costs to orbit.

The **global space economy is now estimated near half a trillion dollars**. Space Renaissance International (SRI), and the space advocacy community at large, can rightfully claim to be protagonists of this phenomenal space revolution. The contribution of philosophy in analyzing the status of civilization is decisive, identifying the best route to the humankind only sustainable development: in outer space. This is the mission of Space Renaissance International, founded 14 years ago: to boost the expansion of civilization into geo-lunar space and the solar system – i.e. **Civilian Space Development**.

Will this be enabled by governments, **by public monetary investments, or by private enterprise? We believe both**. If it is true that the Artemis program would cost less, through the use of reusable launch systems, it is also unfortunately true that a fully reusable launch vehicle is not yet available (though we hope that SpaceX's Starship will fly to orbit as soon as possible!). Could reusability have been implemented earlier? We believe so (decades ago), yet this didn't happen – largely due to differing interests. History is indeed complex.

However, **collaborating is much better than looking for "culprits"**, especially when time is of essence! If what we have now is still a costly expendable rocket, better to use it: we cannot wait. Moon development, as part of a larger civilian space development strategy, shall commence before 2030. People could remark that a coherent strategy doesn't really exist, yet. Right, that's why Space Renaissance exists and restlessly works.

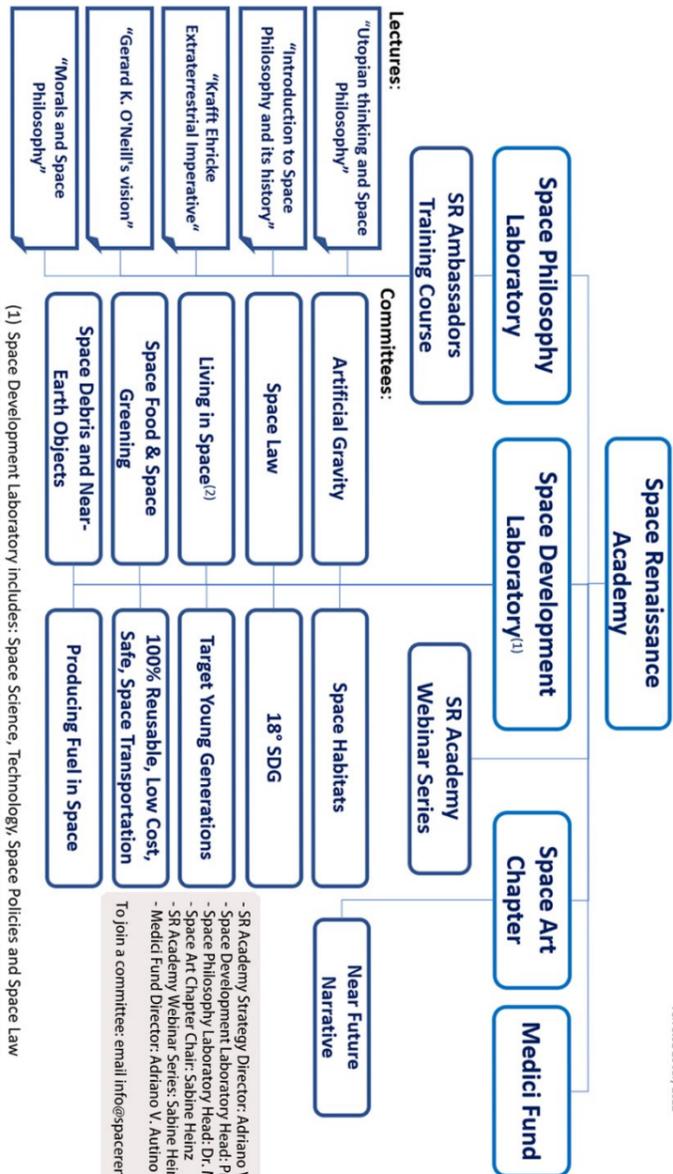
WHAT WE DO

After its 2nd World Congress (2016), SRI started a radical reorganization process, with the goal to evolve from a think-tank to an activist organization, working in the real society. Such process got evident outcomes:

- The **SRI 3rd World Congress, 2021**, elected Prof. Bernard Foing as President, 5 Vice-Presidents and a new Board of Directors. See the Final Resolution (p. 2).
- SRI went to the **72^o IAF Congress at Dubai**, marking a good presence in several committees and symposia.
- In July 2022 we held **the Space Renaissance Art & Science festival in Berlin**, at Archenhold Observatory.
- We started **collaboration with International Space University**, giving lectures in Strasbourg ISU, master classes and workshops (ISU SSP Space Studies Programme) at Oeiras near Lisbon.
- SRI is now a proud **member of IAF**, with which we are increasing collaboration in several committees (p. 3).
- Space Renaissance Academy kicked-off the **SRI Ambassadors Training Course**, and several committees, after the Congress Final Resolution, during next 5 years (p. 4).
- Space Renaissance Academy is holding a **Webinar Series**, twice a month, since one year, hosting space experts.
- A **Space Renaissance Art Chapter** was founded, with space artists from Planet Earth.
- We are **growing our network**, partnering with several organizations, such as Lifeboat Foundation, The Mars Society, ACES, LUNEX, EuroMoonMars, MMAARS, others.
- SRI members are **presenting papers at IAC Paris** and other international space conferences (ISDC, COSPAR, UNGA), and participating to IAF committees (p. 3).
- SRI has been **co-organizing web TV launches** (Space X, JWST, Artemis1) and other events.
- SRI maintains a **calendar of relevant space events** <https://spacerenaissance.space/2022-sri-programme/>
- SRI develops **opportunities, internships and grants** for young professionals <https://spacerenaissance.space/sri-internships-application/>
- **Join the SRI Crew:** <https://spacerenaissance.space/membership/international-membership-registration/> (also use the QR Code on p. 4) <https://spacerenaissance.space/>



SPACE RENAISSANCE ACADEMY WORK BREAKDOWN STRUCTURE (WBS)



VER: 2.01 20 July 2022



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2021 Space Renaissance International 3rd World Congress

“Civilian Space Development”

The Final Resolution



We, the Space Renaissance International, during the 3rd World Congress of our association, discussed the status of civilization, the perspectives of expansion into outer space, and the best strategy to kick-off the civilian space development during next years, towards 2025. After our five days discussion, we are proposing the following recommendations to the good willing people of Planet Earth.

The most relevant fact, since our 2nd World Congress, held in 2016, is the development and consolidation of reusable rockets, now leading to fully reusable space vehicles, like Starship. Such an epochal development will reduce the cost of a seat to orbit under \$1 million, opening the way to industrial space settlement, and civilian space development. Besides continuing to support and promote in all means this effort, we are focusing the next key milestones on such an evolutionary road.

As our association maintained since its beginning, in the Space Renaissance Manifesto, the expansion of civilization into outer space is the only way to overcome the current global multiple crises in the so far philosophically closed world, and to restart a vigorous growth, in the realm of the Solar System.

Such a glorious future is not automatic nor guaranteed. Evolution works by trial and error. And we don't know, yet, whether our species will be a success or a failure, on the history of life in the Universe. The stake is to evolve into a solar system civilization, or to be thrown back to a stone age, should we remain closed within the boundaries of our mother planet.

The above situation delivers to our association – Space Renaissance International, the sole philosophical space advocacy, working in all continents – a huge responsibility: to clearly indicate the priorities, to support the evolutionary effort of humanity, that shall absolutely move the first essential steps before 2030, in order to open the high frontier to civilians, and to keep the door well open for next centuries to come.

To allow a smooth transition from the space exploration to the space settlement paradigm, there are scientific works to be done with more energy and investments, technologies to be consolidated and enhanced, collaborations to be agreed and pursued, in a spirit of a global support to the greatest enterprise of all times: the sustainable renaissance of our civilization in the outer space.

These are our priorities for the next five years, that we recommend to all the people of Planet Earth. We call all space advocacy organizations to join with us and speak with a louder voice.

- **Not going back, but going forward to the Moon: develop proper industrial infrastructure to produce fuel in space.** from lunar and asteroidal materials, also mining resources such as water, rare earths, precious metals and Helium-3.
- **Space debris recovery and reuse.** It is not only a necessary and overdue cleaning action. Starting the reuse of space debris is a bootstrapping point for Earth orbit industry, signaling the transition from a worthy public environmental initiative to the first orbital industrial business.
- **Enhance life protection in space.** Radiation from our sun and deep galactic cosmic rays represent a big threat to health and reproduction. Humans cannot travel and live in space for long time and distances without proper protection.
- **Start experimenting with simulated gravity.** It can be done by rotating connected modules, as an initial method: we need to learn a great deal about the effects of different diameters and rotation speeds on human perception, psychology and physical conditions.
- **Target younger generations** to empower their growth and inspire them on their path to space.
- **Support and boost the development of 100% reusable space vehicles.** Low cost, safe, reliable and comfortable passenger space transportation vehicles.
- **Produce food in space.** Boost exo-agriculture study and experimentation. Start experimenting with large space habitats and lunar habitats, cultivating food and producing oxygen.
- **Space Safety.** Protection from asteroids impacts and strong solar storms. Develop radiation protection shields for space vehicles and habitats, in space, on the Moon and Mars. The same concept could apply to Earth protection.
- **Support the space tourism industries** and their effort to develop civilian space travel and accommodations (hotels), turning the aeronautic experience into profit.
- **Space Based Solar Power.** Inexhaustible energy collected in space, to feed the space industrial infrastructures and to study how to supply energy to Earth surface, as a contribution to clean energy.
- **Support space related art and bring art into space.** We want to develop cooperation and call for competitions and to promote dialog between artists, scientists and all interested people.
- **To add an 18th SDG, bootstrap the civilian space development, to UN 17 Sustainable Development Goals.** In order to make the 17 SDG feasible and sustainable.

Motion approved unanimously, June 30th 2021

SRI at the 73rd International Astronautical Congress – 17 ÷ 22 September 2022 – Paris

Some papers authored by SRI Members:

Name	Paper title	Paper Code	Date/time
Adriano V. Autino	Why the Civilian Space Development shall kick-off now	IAC-22,E1,6,9,x67567	2022-09-21 11:35
	Space Renaissance Academy – the Space Renaissance Ambassadors Programme	IAC-22,E1,7,13,x67568	2022-09-21 16:27
	The value of human patrimony: a 100% inclusive vision	IAC-22,E1,9,10,x67565	2022-09-22 14:39
Bernard Foing	LUNEX EuroMoonMars Earth Space Innovation Highlights	IAC-22,A3,2B,10,x69788	2022-09-19 16:21
	ArtMoonMars: Art-Science Gallery in Space and on the Moon	IAC-22,E5,3,6,x69852	2022-09-20 15:45
Celia Avila-Rauch	Romanticism in Science as a form of cognitive bias and SETI	IAC-22,A4,2,15,x73175	2022-09-19 17:20
	Cognitive, emotional and social skills for aerospace and high-performance teams	IAC-22,A1,IP,60,x71107	2022-09-21 14:30
Emmy Jewell	The Medinaut™ system: a telerobotic, tele-presence flying tele-surgical physician drone-rover ...	IAC-22-A1.4.3.72400	2022-09-20 15:20
	An entrepreneurial vision: curating fully-immersive experiential simulation trainings, ...	IAC-22-E1.8.72380	2022-09-22 11:25
Ghanim Alotaibi	Emerging Space Countries and the Future of Lunar Exploration	IAC-22,D4,2,3,x70153	2022-09-19 10:39
Julio Rezende	Cactus on Mars: Cultivating indigenous plants on Mars: experiments on Habitat Marte space analog station	IAC-22,A1,IP,1,x74223	Interactive
	Evaluating a pharmacy to a space analog station	IAC-22,LBA,D5,1,x74580	
	Evaluation of the overview effect experience in a space analog mission	IAC-22,LBA,E5,3,x74591	
	Workouts in space analog station Habitat Marte	IAC-22,E5,IP,32,x74306	Interactive
Kaja Antlejš	Integrating dual-purposed meaningful Extended Reality (XR) experiences into a daily exercise routine in Isolated, Confined, and Extreme (ICE) environments, ...	IAC-22,E5,6,3,x69103	2022-09-22 15:20
Marie-Luise Heuser	Space Culture and Space Philosophy	IAC-22,E1,9,5,x72663	2022-09-22 14:09
Marie-Pier Boucher	Space Down	IAC-22,E5,3,12,x74321	2022-09-20 16:39
	down to earth: on space urbanism and space cities	IAC-22,E5,3,15,x70539	2022-09-20 17:06
Marlène Losier	Using “Safety Zone” Examples on Earth’s Land and its Waters in order to Better Design “Safety Zones” on the Moon, Other Celestial Bodies and in Inter-Stellar Space	IAC-22,E7,5,11,x74150	2022-09-22 11:55
	Inspiring Legal Initiatives to Safeguard and Enhance Space-Related On and Off World Art and Culture Amongst Greater Sectors of Civil Society	IAC-22,E5,5,9,x74263	2022-09-22 12:15
Susan Jewell	Holotriage: a novel medical first response training for astronauts integrating artificial intelligence, ...	IAC-22-A1.3.3.72348	2022-09-19 15:18
Werner Grandl	Lagrange Asteroid City (LAC) – Asteropolis: the O’Neill’s Space Urban Model Revisited	IAC-22,E5,IP,8,x67566	2022-09-21 14:30

Some papers co-authored by SRI Members:

Name	Papers codes
Bernard Foing	IAC-22,E1,6,9,x67567, IAC-22,E1,7,13,x67568, IAC-22,E1,9,10,x67565, IAC-22,A1,4,9,x72001, IAC-22,A1,IPB,25,x73503, IAC-22,A3,2B,3,x72946, IAC-22,A3,2B,10,x69788, IAC-22,A3,2C,9,x72954, IAC-22,A3,IP,1,x68087, IAC-22,E5,3,6,x69852, IAC-22,E5,IP,8,x67566
Cole Amagost:	IAC-22,E1,6,9,x67567, IAC-22,E1,7,13,x67568, IAC-22,E1,9,10,x67565
Ioana Roxana Perrier	IAC-22,A3,2C,9,x72954
Jerry Stone	IAC-22,E5,IP,8,x67566
Julio Rezende	IAC-22,A1,IP,62,x70505, IAC-22,C3,4,11,x74132, IAC-22,C3,IP,8,x74140, IAC-22,E1,9,10,x67565, IAC-22,E5,IP,32,x74306, IAC-22,LBA,E5,7,x74573
Maria Moukarzel:	IAC-22,E1,7,13,x67568, IAC-22,E1,9,10,x67565
Marie-Luise Heuser	IAC-22,E1,7,13,x67568, IAC-22,E1,9,10,x67565
Marie-Pier Boucher	IAC-22,E5,3,11,x70547
Niamh Shaw	IAC-22,E1,7,13,x67568, IAC-22,E1,9,10,x67565

IAF and IAA Committees participated or chaired by SRI Members:

