



SRI NEWSLETTER – November 05th 2021
by Adriano V. Autino & Bernard Foing

More than 6500 space enthusiasts and participants from over 110 countries attended the 72nd International Astronautical Congress in Dubai, from 25 to 29 October, under the theme “Inspire, Innovate & Discover for the Benefit of Mankind”. It was the first time ever of an IAC to be celebrated in a Middle East Country. The IAC Exhibition guested over 90 exhibitors from around the world, with 46 entities participating for the very first time. Some exciting announcements came up during the Congress: Blue Origin, Boeing, Sierra Space and other partners announced the plan to build a commercial space station called Orbital Reef, to be located at LEO, scheduled to be up and running by the late 2020s. Lockheed Martin and Nanoracks had also announced their intent to build a space station called “Starlab”. The Congress programme included 183 technical sessions with 1,442 registered speakers (included your truly and various SRI members), 18 special sessions, 12 symposium keynotes and over 150 interactive presentations. Our SRI Board Member, Julio Rezende, was active in several sessions, dealing with food production in space, habitats for Mars, psychology and human life safety in space. Our SRI president was organizing the A3 Space Exploration Symposium, chaired several sessions and participated to various panels.

My general impression of this Congress, in a random list. The IAC Congress organized by IAF, taking place each year, reflects well the space community activities, projects, and also climate, mood and feelings. New Space is now a consolidated industrial and social process, well routed on its way. Nobody can anymore deny the relevance of reusable rockets, and the large majority of the speakers I have listened to are basing their hypothesis and projects on the meaningful downsizing of cost to orbit, brought by reusability: many space designers are now allowed to aim higher. Maybe not yet higher as they could and should, but work is finally in progress.

The chapter of human life and health in space was well covered – very much better than in previous Congresses – by the A1, IAF/IAA Space Life Sciences Symposium and the A2 Microgravity sciences and processes Symposium. Human physiology, medicine, radiations, life support, habitats. The only topic still missing right of citizenship at the congress is artificial gravity. A concept is now standing in the background

of many discussions: that civilization expansion beyond Earth's boundaries can highly contribute to a fully inclusive society, where the great abundance of resources can finally give everybody the possibility not only to satisfy their basic needs, but also to achieve the highest levels of the Maslow hierarchic needs pyramid. It is the seed of a new, feasible, utopia, that we sowed during our recent 3rd Congress (see Congress Thesis 1).

Paramount important too, space philosophy and humanities are now well recognized and accepted by the space community. The first IAF Congress I attended, 1998 at Melbourne, was dramatically void of philosophy, yet participants already were missing it. I saw many young people at IAC2021, scientists, designers, economists, scholars of various disciplines, including philosophy. And, heartwarming indeed, Space Renaissance had a great enthusiastic welcome. The space people know us (and know me!), many people which I didn't know personally shook my hand, asked me for comments and short talks, were enthusiast about the Space Renaissance... All of that is for sure due to the big work we made for our recent congress, and of course to the great world-wide influence of our new President, Prof. Bernard Foing. Yet, there is something deeper, in the feeling of this peculiar sub-assembly of humankind, that was looking ahead enough to dedicate their life to human expansion into outer space. The last two years – characterized by the Covid pandemics – have worked hard, to shape and forge space leaders, raising the awareness of the urgency to kick-off the civilian space development. And it is now maybe a general acknowledge that the space philosophers were right, when they were rushing for an acceleration of the enabling technologies, low cost access to space, space tourism, space safety, ... The need to get rid of space debris was well present in several speeches, even if only a few dare to target space debris as a huge source of business development, when we'll start capturing and reusing them.

A vision including the re-use of orbital debris was given, October 27th, in the excellent workshop on [SMART](#) – in Space Servicing, Manufacturing, Assembly, Robotics, Transportation. Joe Parrish, one of the partners of the think tank, composed by several former NASA scientists and space entrepreneurs, illustrated the wide scenario of in-space operations, now more closed to feasibility, thanks to the downsizing of cost to orbit, following to reusability.

In general terms, we can see (at the current early stage) two major milestones in the road to civilian space development, taking the downsize of space travel cost as a KPI: 1) rockets reusability, now consolidated, yet by one only supplier so far, Space X; 2) fuel availability in Earth orbit and beyond, possible by Moon and Asteroids mining. Reusability opened the way to Space Tourism. Fueling in space will open the way to Space Industrialization. The beginning of in-space industry is what SMART is targeting, a full new "ecosystem": Persistent Platform, In-Space Spacecraft Build, Aperture Assembly, Fuel Depot and Service Stations, Space Factory, Scavenging and Recycling Space Debris, Manufacturing Large Structures in Space, Space Tugs, Servicers, and in-space transports, Small Spacecraft Concepts, Near-Term Human Exploration and Lunar Exploration Opportunities, Up/Down Mass Transportation. All of the above in a good old reassuring American business-style (😊), without neglecting sustainability.

Another workshop I attended as a panelist, characterized by an high level mature and pragmatist approach, was the Lunar Exploration Session, Tuesday 26th, in the frame of A3, symposium on Space Exploration, chaired by our SRI President, Prof. Foing. Many of the speeches discussed the building of lunar bases, and technologies to start exploiting lunar resources – not only exploration, then. In this workshop, btw, SRI was officially present and very welcomed for our philosophical and cultural contribution, as well as technical presentations. In a short talk, I mentioned the relevant role of the Moon in the civilian space development agenda: the Moon is the first step in space industrialization, and a fundamental first repository of resources to produce fuel off-Earth.

As a SRI Ambassador, I had the opportunity to participate to the meeting of the Committee For The Cultural Utilisation Of Space (ITACCUS), chaired by Prof. Foing, where myself, and a number of SRI Members, were accepted as new members of the Committee, in view of a strict collaboration between SRI and the Committee itself.

We also had the opportunity to meet an incredible number of colleagues at some events and parties, such as the Space Generation Advisory Council. Many of these new contacts will favor the further development of the Space Renaissance Academy Webinar Series, and studies.

SRI, that recently applied to become a IAF member organization, is growing in its role of umbrella organization, helping to coordinate the efforts of several groups, committees and space advocacy organizations.

Adriano V. Autino, SRI Founder, Former President, Ambassador

Of course many other things happened during the 10 days IAC2021: see [a very detailed report by Prof. Bernard Foing](#), SRI President. Here's a brief excerpt.

Highlights from 72nd International Astronautical Congress IAC2021 at Dubai

IAC is organised every year by IAF International Astronautical Federation. This year the 72nd International Astronautical Congress IAC 2021 25-29 October in presence in Dubai at World Trade Center was very comprehensive, exciting and attended by more than 6500 registered participants from over 110 countries, under the theme "Inspire, Innovate & Discover for the Benefit of Mankind".

<https://www.iafastro.org/events/iac/iac-2021/>

SRI was present and active. I participated as panelist to: (Tuesday SpS) Impact of Satellite Constellations on Astronomy and Society: a Multi-disciplinary Approach; (Wednesday SpS) Designing a Geostationary Space Station for 22nd Century; (Thursday GNF, see picture below with Horizon 2061 supporters team) Horizon 2061 Planetary Exploration Foresight: Science, Missions, Technology, Infrastructures & International Stakeholders; (Friday GNF) The Deep Space Food Movement.

In particular I have been organizer of 3 lunar oral sessions (with more than 40 oral presentations at Dubai), and A3IP Solar System Interactive presentations (with 42 presentations on 6 screens). I presented in a number of events and oral technical papers, and was co-author of 15 others presented by collaborators and students at IAC. Adriano Autino, Julio Rezende, Susan Ip-Jewell and other SRI members had also oral papers presented at technical sessions, and participated in special sessions and panels. SRI members authored or co-authored more than 30 conference articles now included in IAF Digital library.

We participated to a number of these technical sessions, discussed collaborations with great colleagues and institutions. The Space Exhibition was very impressive with stands from different space agencies, industries, countries and stakeholders. We met there with colleagues, and even found a Space Inflatable Habitat to be carried by EL3 European Lander to discuss collaborations.

We advanced partnerships between SRI and IAF, ILEWG, International MoonBase Alliance, ISU, space agencies, industries, NGOs, UN OOSA, SGAC Space Generation Advisory Council. With SRI members present and remote, we participated also to a number of IAF Committee meetings and proposed SRI candidates that were voted as members or experts in some of them, renewing participation for 2021-2024: (<https://www.iafastro.org/about/iaf-committees/>) Committee for the Cultural Utilisation of Space (ITACCUS) (elected chair B Foing 2018-2021, reelected 2021-2024); Space Exploration Committee; Space Traffic Management Committee (Established in 2020); Space Habitats Committee (Established in 2020); Space Astronomy Technical Committee (SATC); Space Museums and Science Centres Committee; Space Societies Committee (SSC); Space Universities Administrative Committee (SUAC); Technical Activities Committee (TAC); Workforce Development-Young Professionals Programme Committee (WD-YPP); Committee on Integrated Applications; Committee on Near Earth Objects (NEO); Committee on Space Security; Earth Observations Committee; Subcommittee on the Global Earth Observation System of Systems (GEOSS); Human Spaceflight Committee; Space Life Sciences Committee.

We were invited to support UN OOSA Space4All initiative in coordinating a platform for access of analogue research bases and activities over the world in collaboration with SRI, ILEWG EuroMoonMars, International Moonbase Alliance and other partners.

We had also opportunity for social networking at UN-IAF workshop reception, a Karman fellow event, IAC welcome reception, an Industry breakfast at 7h00 am, at a SGAC alumni event hosted by Planet, a 3G Diversity breakfast celebrating JPL achievements, a series of VIP lunches with personalities and invited

speakers, an ISU/SGAC/YP event for Young Professionals, a Dinner with celebrity chef Martha Stewart and the Space Food Movement team, and finally an impressive Gala Dinner at the low terrace with Dancing Fountains of impressive 820 m high Burj Khalifa tower.

The next IAC will be in Paris on 18-22 Sept 2022 <https://iac2022.org/>. SRI and partners will be actively involved in preparation and participation. See you all there for a Space Renaissance!

Prof. Bernard Foing, Président Space Renaissance International, IAC2021 International Programme Committee

See [the whole report and pics from IAC2021, by Prof. Foing](#).

We need our many thousands followers to [join the SRI Crew as members](#), and help us bringing SRI to its deserved place, in the galaxy of space advocacy! That will not cost too much to each member, yet it will allow us to better develop our programmes!

Keep on following and supporting the Space Renaissance!