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INTERNATIONAL CONFERENCE of SCIENTIFIC PAPER  
AFASES 2013  
Brasov, 23-25 May 2013

## RACE TO DOMINATE SPACE

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**ABSTRACT:** *Conquering cosmos around ground as a new sphere of human activity and its influence on the development of science, economics and social conditions of life on Earth beyond incomparable consequences they had conquered oceans and airspace.*

*Space became the fourth dimension possible war. It's a win recently, but its influence is ever-present and in the near future will be decisive. Effect of using space feels isolated from fighter action, up to the highest level of military art. Spatial dimension of power could have a decisive impact in a possible military confrontation and a key role in ensuring the security of states and regions in peacetime.*

*Flight in space technology and specific needs, depending on the latest scientific discoveries in aeronautics, electronics, metallurgy, chemistry and information technology, all of which ultimately require substantial financial support.*

**Keywords:** outer space, lasers, missiles, landing, space power, space orbit.

### I. GENERAL:

One of the ongoing concerns of human actions throughout its evolution was entering the space located beyond the horizon of knowledge and existence. With resources becoming more sophisticated, the man began to conquer the air, first by ballooning, then flight with wings means (glider, plane, etc.). Continuing with rockets propelled him into space. After this stage, the man became an "average" space, using increasingly sophisticated technical means. Conquering airspace has enabled man to dominate land and water, helping to expand its scope of action. Associating these means sophisticated information technology, man has managed to completely

dominate the airspace, so that today, for example, a surface to air missile shot is more accurate than a gun<sup>1</sup>.

Today, more and more players have ongoing geopolitical cosmic programs at various stages of development (the U.S., Russia, China, EU, Japan, France, Italy, United Kingdom, Israel, India, Brazil, Canada, etc.).<sup>2</sup> The existence of such programs and opportunities substantially alter the global balance of power, in that power

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<sup>1</sup> Nicolae BUZATU, *Aerocosmica dimension of war and its impact on military thought and practice*, PhD thesis, published by National Defense University "Carol I" 2011;

<sup>2</sup> Michael R.Mantz, „*The New Sword, a Theory of Space Combat Power*”, Air University Press, Maxwell Air Force Base, Alabama, Research report No.AU-ARI-94-6, mai 1995, pp. 4-8.

generally and particularly its military adds a new dimension, the spatial<sup>3</sup>.

Spatial trend in technology is to reduce the size of the satellite mass. In 1990, Stanford University U.S. developed program called "cubes" for satellites standard size 10 X 10 X 20 cm and a weight of 1 ÷ 10 kg<sup>4</sup> (weight class of satellites known as nanosateliți), which has a cost of about \$ 250,000 U.S. the mission. The next class lower, falling picosateliți, weighing 0.25 ÷ 1.0 kg and dimensions of only 3 X 8 X 10 cm is developed experimental USAF Aerospace Corporation.<sup>5</sup>

Laser emergence in the mid twentieth century, scientific and technical creation of exceptional importance for mankind led to a new revolution in military technology and weaponry. In laser space not changed due to the presence of the atmosphere and can be used in conditions of maximum efficiency for a variety of missions. Not be neglected using it as a weapon in space (ASAT),<sup>6</sup> strong and effective. Installed on an orbital station, a satellite or ground-based technical platform or water, the laser can,

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<http://www.presamil.ro/OM/2004/04/pag%/2011,12,17,18.htm> accesat la 17.01.2013.

<sup>4</sup> Cf. Daren Buck, „*Space 2035: Technology Transparency, and Trusted Immunity*”, Air War College, Air University, SUA 2010, p.11 și [http://spacenews.com/cubesats\\_galore.html](http://spacenews.com/cubesats_galore.html) , accesat la 17.01.2013.

<sup>5</sup> Hincley David și Janson Seigfried, „*Building Miniature Spacecraft at The Aerospace Corporation*”, în revista „Crosslink”, SUA, nr.1/10,vara 2009, pp.37-38 .

<sup>6</sup> Cf. Wright David, Grego Laura and Gronlund Lisbeth, „*The Physics of Space Security – a reference manual*” American Academy of Arts and Sciences, Cambridge, SUA, 2005, p.125.

through the power and precision to destroy, in seconds, aircraft, missiles or space objects. Can also neutralize satellites broken the electronic circuits, solar cells or photographic objectives (optical). Potential is very large laser weapon in space, research and experimentation continues to this day, usually in secret. However, most developed military application of the laser is in the delivery of communications between satellites and between satellites and ground weapon systems (large) or nuclear submarines in immersion, respectively leadership structures tactical, operational and strategic located on land, at sea (ships) and air.

## II. COMPETITORS MARKET SPACE

On 1/10/1996, the United States was founded "the National Geospatial Intelligence" (National Geospatial Intelligence Agency - NGIA) by merging several structures including the Defense Mapping Agency (Defense Mapping Agency), Central Bureau of Images (Central Imagery Office), National Center for Interpretation Photos (National Photographic Interpretation Center) of the CIA. NGIA specializes in the collection and interception of information obtained by photographing and filming made secret spy satellites. This agency has three divisions composition (Operations, Systems and Technology, Business Agency<sup>7</sup>) and respond to requests for imaging activity coming from the

<sup>7</sup> Cf.Mihai Axante, „ Research, business intelligence, "Niculescu Publishing, 2006, p.208.



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Department of Defense and other ministries and agencies of the U.S..<sup>8</sup>

The first military space plane (X-37B) completely autonomous successfully launched into orbit by the U.S. Air Force (USAF) on 22 April 2010 from Cape Canaveral in Florida. X-37B is able to take off, to reach low Earth orbit and land 100% autonomous. An important feature of X-37B is that it can operate in optimal conditions in orbit for 270 days without returning to Earth.<sup>9</sup> And other countries - India, China, Russia, France, Israel, etc.. - Have their own satellites, only certain segments and certain areas and their orbit maneuver is unlikely to be achieved except Russia who have the almost similar to those of the U.S.

Russia has an extensive ongoing research program entitled "Cosmos" aimed at studying several areas of physics Earth to medical and biological research using satellites from 500 kg to 4.5 tons heavier ones types: Cosmos, Vostok, Meteor, Molnos and Intecosmos. France has used several research satellites under the SRET (Recherches et d'Etudes satellite the technologique) including Pollux (D5-A), Castor (D5-B), SRET-3 (MAS-3)

etc. Japan launches its own satellites Research (Oshumi, Tans, Kiku, etc.). Mainly from bases in Tanegashima and Kagoshima carrier rocket production facilities. England has research satellites X Series (Prospero X-3, X-4-Miranda) China has a program called "China", France and Italy cooperate on the Duetto (Meteosat satellites and Sirio), India possesses series satellites Rohini RS and the list remains open for more countries development programs of certain spatial abilities.<sup>10</sup>

### III. DEFINING ELEMENTS OF SPACE

Analyzing the outer space of geopolitical and geostrategic environment can divide this into three relatively distinct sectors<sup>11</sup>:

a. near circumterestru space that extends from Earth's surface up to about 40,000 km away from it, and the maximum orbit satellites main characteristics is given in missile carrier, eg Russian missiles such as PROTON - M, K, Soyuz - 2, U, Molnos - M, and so on, the U.S. ATLAS type (MERCURY, agencies, centaurs, etc.) Chinese missiles CHANG Zeng series - Long March - (CZ-1, CZ-2A, B, C, CZ -3, CZ-4), the

<sup>8</sup> Dr.Tiberiu Tănase, „ The U.S. defense intelligence - intelligence community and Department of Defense strategy "in Romanian Military Thinking nr.2/2010, p.99.

<sup>9</sup> [www.af.mil/news/story.asp?id=123199790](http://www.af.mil/news/story.asp?id=123199790), accesat la 19 decembrie 2010.

<sup>10</sup> Gl.mr.ing.Dumitru Andreescu "Encyclopedia space programs "Vol.II, Military Publishing House, Bucharest 1980, pp.10, 49, 52, 53.

<sup>11</sup> Col. Prof. univ. dr. Giurcă ION, "Geostrategy sea, air and space, "AISM Publishing, Bucharest, 2001, p.13.

European Space Agency ARIANE type 1, 2, 3, 4, 5, etc <sup>12</sup>.

b. moon outer space (which can become the theater of war lunar space) includes space ranging from 300,000 to 450,000 km within Earth's surface including areas of Moon L4 and L5 points libration the groups could be carried orbital forces and means of launching, guidance, and ensure their functionality and fighting forces and means Moon-Moon-Earth and Cosmos;

c. distant space that extends beyond 450,000 miles away from Earth is accessible, yet just means cosmic unmanned.

Space power theory, created and developed by American analysts, based on the models of Mahan, Mackinder and John Collins (higher analyst at the Library of Congress) in the study entitled "Military Space Forces: The Next 50 Years", is essentially following:<sup>13</sup>

- who controls the planet possesses circumterestru space;

- Who controls the moon controls the space circumterestru;

- who controls the L4 and L5, mastered Earth-Moon system.

Space programs have astronomical prices. U.S. allocates a share of about 65% of NASA's budget for military purposes which was only for the period 1955-1995, 251 billion.<sup>14</sup> If for fiscal year 2011, NASA has a

budget of 19 billion dollars for fiscal year 2012, an estimated allocation of U.S. \$ 18.724 billion <sup>15</sup>, down from the previous year due to budgetary constraints imposed by the Obama administration.<sup>16</sup> Defense budget by China for 2008 amounted to 83.1 billion U.S. dollars <sup>17</sup> but lacking official information on the expenditure spatial. Budget for defense in 2010 by the Russian Federation was U.S. \$ 42.5 billion, up 3.5% from 2009, representing 4.07% of GDP.<sup>18</sup> Russian Space Forces budget has not yet been released. The defense budget for 2010 was 692.780 billion U.S. dollars, research / development in space programs were allocated \$ 2.626 billion for the payment orders engaged in space was allocated \$ 4.163 billion, and for the preservation program kinetic energy interceptors were allocated \$ 80 million<sup>19</sup>

Also of importance is the assessment of the first Romanian cosmonaut Dumitru Prunariu saying that *"the EU is a considerable space power. Undoubtedly, the military superpower and space are the United States. Currently, the U.S. invested six times more than the whole of Europe in space. Runner already are not Russians. Russians have a strong infrastructure that have inherited and which he still develops where needed. Like others, Russians invest more now*

<sup>12</sup> „Rockets & Launch Vehicles”, The Internet ENCYCLOPEDIA OF SCIENCE, [http://www.daviddarling.info/encyclopedia/R/rockets\\_list.html](http://www.daviddarling.info/encyclopedia/R/rockets_list.html) și <http://www.mil.ru/848/1045/1276/1871/index.shtml>, accesate la 28.01.2011.

<sup>13</sup> Alvin și Heidi Toffler, *Op.cit.*, p.130.

<sup>14</sup> „ Bulletin of the Ministry of National Defense Information and Documentation”, nr.3 /1999 p.15.

<sup>15</sup> [http://www.nasa.gov/pdf/516675main\\_NASAFY12\\_Budget\\_Estimates-508.pdf](http://www.nasa.gov/pdf/516675main_NASAFY12_Budget_Estimates-508.pdf), accesat la 14.01.2011.

<sup>16</sup> <http://www.whitehouse.gov/omb/budget/fy2012/assets/hist.pdf>, accesat la 14.01.2011.

<sup>17</sup> Conf. „*The Military Balance 2010*”, tabel 34, p.392.

<sup>18</sup> Ibidem, tabel 21, p.219.

<sup>19</sup> Ibidem, tabel 6, p.26.



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*in national security through the use of space, so the military cosmos. Perhaps second place is the Chinese who have already put their own means, three astronauts in outer space. First catching up India, Japan, the EU also through programs European Space Agency (ESA) and the EU ordered this institution is organized apart from other European institutions. One of the prospective allies is the Russian Federation: let's not forget that at Baikonur ESA Kourou in French Guiana on already is devised throughout the infrastructure type Russian Soyuz carrier rockets with Europeans on board satellites, or even space ships piloted.*<sup>20</sup>

Since placing weapons in space is illegal space powers have chosen the placement in space, orbit circumterrestrial, of "platforms" - satellites, orbital stations and space shuttles - fulfilling missions whose results can be used both in the civil and in the military<sup>21</sup>.

From the point of view of space înamării there are three reasons for this choice:

a) control - who controls the military and commercial space has immeasurable advantages that provide indisputable sovereignty;

b) vulnerability - reliance on space assets show particular vulnerabilities;

c) inevitable - succeeding temporal space weapons on land, sea and air (historical analogy sea and air power design - "trade follows the flag" on military development in terms of protecting commercial expansion)<sup>22</sup>.

#### IV. PROSPECTS OF RACE ESCALATION TO CONQUER SPACE

In recent years, the possibility of earthly astronauts to reach the Red Planet is increasingly taken into account. However, despite the optimistic expectations of fans travel and space exploration experts say that such travel involves huge risks related to exposure to radiation, but also any technical failure, not least in how isolation can affect human behavior. An equally serious danger, unknown until now, was highlighted two years ago: the possibility that astronauts going blind because of the long stays in weightlessness<sup>23</sup>.

Our seductive Selene absence would put another question. Luna is one that stabilizes the tilt of the Earth in relation to the axis of rotation. This axis

<sup>20</sup> Dumitru Prunariu, „ Aerospace power is Romania? "In Top Business Magazine nr.710/2008, p.9.

<sup>21</sup> Mihail ORZEA □Ă, Continuous war, p.44, Military Publishing, Bucharest 2011

<sup>22</sup> Dorin LUPARU, Space as a medium between law and military power (II), Military Thought Magazine nr. 6/2012, p 81.

<sup>23</sup> Review magazine. 29 September 2012

tilted about 23 degrees from the planet causes the alternation of seasons. But without moon inclination may vary by about 85 degrees in a few hundred thousand years and chaotic motions of the planet would have a major influence on the distribution and even the very survival of living species. A delightful view at all, but fortunately remains still, for a long time, the state of scientific hypothesis<sup>24</sup>.

Juno, American spacecraft launched in August 2012 from Florida to Jupiter to get close to giant planets in 2016, after 2.7 billion will go miles. Flight energy required is provided by the three large solar panels equipped with 18,000 photovoltaic cells, becoming the first probe will cover such a distance using solar energy.

Near the planet, astral light is 25 times weaker than the Earth which implies avoiding passing through the shadow of the planet. If all goes well, the probe will remain a year to make polar orbit 33 times world tour, during which you see the dense gaseous atmosphere. Study its structure could provide new information about the other giant planets discovered lately orbiting other stars of the Galaxy. Juno will try to respond to questions like gaseous planet's core is full? Its powerful magnetic field is generated by a vast ocean of metallic hydrogen? How was born the oldest planet in our Solar System? Will it reveal some of his secrets about the origin and evolution?

After data collection, the probe will go into the planet's atmosphere to

get us inside information about it, confused by titanic hurricanes<sup>25</sup>.

In 2010, a Japanese company (Shimizu Corporation) has proposed to install a network of solar panels circular equatorial belt along the 10,920 kilometers. Width is several tens of kilometers Luna Ring project. The advantage is that sunlight is captured continuously and weather conditions are always favorable. Energy produced can be transmitted receiving stations installed in various areas of the entire surface of the Earth through huge antennas.

Apollo missions revealed the presence of gold and silver in the basement of the moon (near the surface) in the 1970s. Then they were spotted deposits of titanium and platinum. In 2010, during the American LCROSS mission, was detected mercury, methane and hydrogen in Cabeus crater. Unfortunately, the quantities of items are too small to justify their exploitation. But looming interesting track towards another element, helium 3, carried by the solar wind (found in small quantities on Earth). It is estimated that at a depth below the crust monthly insignificant, there are millions of tons. An ideal fuel for nuclear fusion (a few hundred tons would be needed to meet the power needs of humanity in a year). Theoretically, it is a godsend. But basically, things get complicated because there are technical means to exploit deposits and transfer them to Earth.

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<sup>24</sup> Review magazine. 43 of 27 October

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<sup>25</sup> Review magazine. on September 29, 2012



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Although President Obama has decided to cancel the space program Constellation to return to the moon, NASA, which has \$ 8 billion annually for manned flights continue to develop a program to achieve a huge rocket and a spacecraft - Orion - with the consent of Congress, the decision was logical that stopping the project would bring financial harm because it is in an advanced stage. Orion spacecraft will make a test flight in 2014 and 2021, a flight crew.

Long term objective aims to install a monthly basis and a permanent space stations in Lagrange point (where gravitational forces are balanced) between Earth and the Moon, necessary stopovers, especially the flight to Mars. On the other hand, the European Space Agency is ready to achieve automatic spacecraft landed in 2018 could<sup>26</sup>.

A version of the latest NASA space shuttle astronauts to fly will allow to and from the International Space Station was officially presented to the United States in the last week of May 2011. Orion Shuttle was originally designed for a new ground missions to the moon, mission canceled at the last minute by President Barack Obama. It is hoped that two type Orion spacecraft can be used in a long-term mission, targeting a manned landing on an asteroid by 2019.

Spacecraft will have a much more limited role of "carrier" for supply missions to the International Space Station, located circumterrestrial orbit. For docking operations in space to flow perfectly, cosmic vehicle makers, engineers and specialists from Mardin Lockheed built a huge test point in the Waterton Canyon south of Denver, where the size of the model space station and Orion can practice maneuvers required shuttle transshipment.

Fitting this place called Space Operations Simulation Center, cost \$ 35 million. Test version of the device, although no special ceramic coating outside, is otherwise fully equipped inside with all necessary equipment. Initially, Orion was part of a mission called Constellation, which the American administration during President George Bush Jr. planned to spend no more than \$ 100 billion. But President Obama canceled the project last year, saying the space program should focus on a more advanced technology in missiles. He revived only that part of the project on the shuttle Orion, which will act as a "rescue vehicle" for astronauts in difficult situations.

NASA expects shuttle could play two important roles in future manned flights, including transport to the space station in orbit around the Earth low

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<sup>26</sup> Magazine shop No. 46 of 15 Nov. 2012

and long journeys, to other heavenly bodies.

"Orion will evolve from what was at first the Constellation program, as should, as part of a complex missions, manned," said NASA spokesman Bob Jacobs. Officials at Lockheed Martin suggests that Orion could be the next generation of space rockets, first to explore the unseen moon, then to land astronauts on asteroids and eventually take them to one of the moons of Mars, where could control robotic instruments on the surface soil.

Orion includes a module for crew and cargo related, a service module for propulsion, electrical generators and other devices and a release / surrender to raise capsule safe to rocket propulsion fails. NASA has already successfully tested this system three weeks ago at White Sands Missile Range, New Mexico.

The first Orion capsule is assembled at Waterton Canyon, another plant of the company Lockheed Martin and will be used first to test the ground before being launched on a suborbital test flight. The first orbital mission of the Orion capsule could happen, said John Karas, vice president of Lockheed Martin Space Systems Co., In 2013<sup>27</sup>.

It seems strange, but once managed to win the battle space to conquer the moon, Americans seem to abandon the idea of returning to the "astral night." Such a new program is too expensive or simply too dangerous, impractical? In early 2010, U.S. President Barack Obama officially announced that abandons the

"Constellation" of NASA, which aims to send a U.S. per month is considered too expensive. China has initiated a spectacular manned space program, found himself at the forefront competitors, although probably few have seen on television in 1969 Apollo 11 mission success.

Now, to prove the status of world power, China wants to be the first Asian country, and not only to send a man to the moon. To this end, China has launched an ambitious program called "Chang'e" already scored two probes Monthly successful missions. "Chang'e-1" (released in October 2007) and "Chang'e-2" (released in October 2010) enabled after placing in orbit, making detailed observations of the Moon. Next stage is set for next year.

In 2013, the mission of "Chang'e-3" landing is a module capable of performing scientific analysis of the soil. This will be the first moon landing in Chinese history, even if comes 44 years after Neil Armstrong's adventure is especially important to allow China to join the club of great powers etilist space. Finally, a fourth mission of the "Chang'e" provides for a new monthly probe landing and then return to Earth.

In June 2012, Shenzhou IX space mission demonstrated China's ability to master a rendezvous space technology, an essential step in the conquest of space. At that time, China sent the first woman into space orbit. With these technological achievements, China is trying to shorten the delay with the U.S. and Russia in the field of manned space flights. But other Asian countries have ambitions monthly. And foremost, India, on 14 November 2008 managed

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<sup>27</sup> Review magazine. 22 of June 2, 2011





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to place a space probe to the moon, which is a first for Indian space program initiated in 1963. India, which is planning manned space flight for 2016, 2013, announced the launch of space probes to Mars, even if "Mars mission" is led and dominated by NASA.

Regarding the ambitions of Japan, is also a space power first hand, particularly involving the International Space Station program<sup>28</sup>.

European missile Park recently included a small ally: Vega, the result of a Franco-Italian collaboration. It has three floors, a height of 30 meters, has a carbon engine and can carry low orbit (up to 700 km altitude) 1.5 tonnes of freight (for comparison, the Soyuz has a transport capacity of 3 tons, to an altitude of 36,000 km).

Is an economical solution for launching satellites that orbit so far were transported Russian SS-19 ballistic missiles, called Rockot with low reliability, which missed the launch of several European satellites<sup>29</sup>.

Tuesday, May 22, 2012, Space X has become the first private company in the world to send a spacecraft to the International Space Station (ISS) before, unmanned space missions aboard being conducted by government agencies.

The day the world premiere Falcon 9 rocket, privately owned SpaceX, the Dragon capsule placed in space, launch point is Cape Canaveral Air Force Base near the Kennedy Space Center in Florida. It is no less true that this was associated first and NASA, as a government agency, without which no space flight is not possible in the U.S..

The next day, on May 23, the Dragon capsule, weighing 6 tons, a length of 5.2 meters and a diameter of 3.6 meters, has successfully connected to the ISS. Elokim Musk (40 years), SpaceX company owner promised to keep trying even if they failed. "The attention caused by this mission creates high expectations, even if it is just a test flight, the consequences of failure could be significant," said John Logsdon and former director of the Space Policy Institute at George Washington University, close associate of NASA.

Bet NASA SpaceX much success as the U.S. space agency relies on the private sector - which has partnered to take over after the withdrawal of U.S. space shuttle in July 2011 - to carry yet this year and at lower cost materials and supplies aboard the ISS and then astronauts since 2015. Interest and impatience are explicable because NASA depends exclusively on Russian Soyuz capsules for each paying \$ 50 million per seat on board these vehicles. In addition, supply missions, SSI depends on vehicle type automated

<sup>28</sup> Review magazine. 36 of 6 September 2012

<sup>29</sup> Review magazine. 7 of 16 February 2012

Russian Progress cargo, European (ATV) and Japanese (HTV, which are designed to be used only once and at the end of the mission to self-destruct, burning on re-entry atmosphere.

SpaceX Dragon Capsule firm who can carry on the ISS payload of six tonnes, is reusable, it can return to Earth with a load of three tons, operating costs are much lower in these conditions. \$ 1.6 billion contract signed with NASA, SpaceX requires to perform 12 missions to ISS supply over four years. At the press conference after the successful launch on May 22, Elon Musk wanted to remember, besides the honor of collaborating with NASA and the 1,800 employees of SpaceX, that is the third consecutive launch success Falcon 9 rocket out of 5.

Explaining the significance of May 22, Musk said: "The mission marks a new era in space exploitation. Can be compared with the advent of the Internet in the mid 90's, when private companies have entered into what was a government mission. This incredibly fast pace of Internet development market. I think we are at the same time today on space transportation technology."

Flight schedule

May 22 2012: SpaceX Dragon space capsule launched a Falcon 9 rocket from Cape Canaveral Air Force Station;

May 23: Dragon enrolled Earth orbit and was heading towards SSI;

May 24: Dragon Capsule sensors and flight systems have undergone complex tests to finish if the vehicle is ready to engage with Space Station. These tests included maneuvers and

airborne systems checks when the capsule is 2.5 km from the ISS.

May 25 to May 31: After docking, the ISS astronauts opened the hatch dragon and had time over the six days carrying cargo capsule to download and upload Dragon Station on Station materials for return flight.

May 31: After a two week mission, Dragon emerges Space Station and returned to Earth, landing in the Pacific Ocean, a few hundred kilometers west of South Carolina.

SSI is a space project worth 100 billion dollars, funded primarily by the United States of America and to the realization that 16 participating countries. The station is manned continuously occupied since November 2000. ISS is orbiting Earth at an altitude of 350 km, making a complete revolution around the Earth's each 90 minutes, an average speed of 28,000 km / hour. Weighing over 408 tons, SSI offers a living space equivalent to a Boeing 747<sup>30</sup>.

A Swiss company prepares its first flight around the world of an aircraft powered only by solar energy. It was time for this performance, especially with how many years solar car races are held.

The high performance expected by Swiss solar plane is named Solar Impulse. He landed safely in 2012, Madrid Barajas Airport, with international flight point first phase of Payerne (Switzerland) and Morocco. However, the decisive moment is around the world, the Solar Impulse adventure is scheduled to start in 2014.

The 2000 kilometers have been

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<sup>30</sup> Review magazine. 22 of 31 May 2012



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traveled to Spain in 17 hour flight, no dizzying speed, but promising. The plane, which does not use any fuel, crossed the border at high altitude surveying Spanish Pyrenees, the main obstacle in his path, the aircraft being pilot Andre Borschberg.

Solar Impulse has the scale of an Airbus A 340 (63.4 m) but weighs only 1600 kg, the weight of an average car. Flight on stage was necessary because the device is not large enough to allow a longer route to use the two pilots. From Madrid, Solar Impulse was piloted by the other co-founder of the project explorer Bertrand Piccard, who had the task of leading device over the Straits of Gibraltar, to the final destination Rabat. About 150 specialists worked seven years to this plane carbon fiber. He began the construction of the second unit, HB-SIB, which will travel round the world without fuel in 2014. It will be great to have a more spacious flight deck, and new batteries and motors. The plane will be ready in 2013, this year is set and the first test flight<sup>31</sup>.

ZEHST called supersonic plane, which is in prototype phase, conducted several French companies can travel the distance Paris-Tokyo in 2 hours and 30 minutes! A time of challenge and a great privilege for passengers to be achieved given a speed of Mach4?

(5000 km / h, four times higher than that of sound)

It is equipped with three engines, two biofuel-powered jet (used for takeoff and landing) and is in feasibility studies. Between the two reactors is three rocket engines, the models of the Ariane rocket. After reaching an altitude of 23 km and speed of Mach 2.5 comes into operation two hydrogen statoreactoare providing a speed of Mach 4 spots up to 32 km altitude.

At the end of the journey, stratoreactoarele will be decoupled plane down in flight hovered between 23 and 10 km altitude until entering service turbojets providing landing.

The aircraft will emit 80% less gas emissions and will be 65% less noisy than those made so far. The first flight will take place before 2020<sup>32</sup>.

Since 2012, Romania entered the orbit space. European Space Agency (ESA) launched on February 9, 2012, between 12.00 and 14.00 (GMT), from its base in French Guiana, the first Romanian microsatellite, baptized with the name Goliath project in a Romanian Space Agency (ROSA ). Our country has become, since December 22, 2011, a member of the ESA, the largest European intergovernmental organization of scientific and technological activities which, in 2012-

<sup>31</sup> George Lucaci, Review magazine. 23 to 7 July 2012

<sup>32</sup> Review magazine. 38-22 sept. 2011

2013, Romania has to contribute about 7.4 million.

Important to note is that GOLIAT is not a single idea Romanian specialists (which contributed to remember, students from the University of Bucharest - Faculty of Physics, but also from Polytechnic - Faculty of aircraft). Conversely, achieving microsatellite is part of the ROSA program that tries to be imposed in Europe. "It's a fairly new concept that change certain aspects of the space industry"<sup>33</sup>.

## V. CONCLUSIONS

Today, there are more countries with space activities than they were 40-50 years ago, capable contracacreze solitary freedom of action by various types of interference such as jamming signals solitary.

We appreciate that it would be accepted that security will be more efficient in space achieved by a system based on rules rather than by implementing destabilizing weapons systems.

In the long run, the best way to protect commercial interests, scientific and security stability in space will be through the rule of law, obviously better than the unilateral assertion of military power.

Space, time and technology are and will be key factors with decisive impact on the strategy and tactics used in the war of the future. In Lu, the emergence of cyberspace (virtual) will further increase the complexity of future warfare. Complementarity and compatibility of future confrontations

spațialo / cyber will make certainly the next century in human history.

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<sup>33</sup> Review magazine. 4-26 fever 2012



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SLOVAK REPUBLIC

INTERNATIONAL CONFERENCE of SCIENTIFIC PAPER  
AFASES 2013  
Brasov, 23-25 May 2013