SPACE ECOSYSTEM AND SECURITY WORKSHOP - 1

FINAL REPORT

The first **Space Ecosystem and Security Workshop** with the main theme “New Economy and Security Architecture of Space” was conducted as a co-event of "New World Architecture of Economy and Security" titled **Istanbul Security Conference** on **07 November 2019** in CVK Park Bosphorus Hotel, Istanbul by **TASAM**.

Prof. Dr. Fuat İNCE from the National Defence University Aeronautics and Space Technologies Institute participated as the Keynote Speaker and Chair, Prof. Dr. Alim Rüstem ASLAN and Nazlı Can from Istanbul Technical University and Dr. Cüneyt DİRİCAN from İstanbul Arel University participated as speakers to The Space Ecosystem and Security Workshop, where **“Space Tourism and Colonization", "The Consequences of Downsizing in Commercial Space", "Space Traffic and Regime"** and **“Military Space”** were discussed. The relevant authorities and a large number of distinguished national and international participants contributed to the discussions.

Within the framework of the Workshop, the determinations, assessments and recommendations that are brought to the attention of the relevant authorities and the public are as follows:

1. Space is no longer be an indicator of superiority or prestige area as experienced in luxury and Cold war. Space; by means of technological developments, has become a vital area with the opportunity and potential to contribute to safety, economy, environment and development.

2. Space security must be taken into account and should not be neglected both in peace and war times. Now, space technologies are included in the scope of less skilled states, developing states, small firms and universities. Turkey and all developing countries must be taking place in new fields of activities in space.

3. Space technologies and utilization of space have undergone a paradigm shift called "**New Space**" in the new century. Space is no longer an area that is only used by “space-capable” big states and related giant firms. The spread of technological developments and to obtain them easily, especially the downsizing in electronics, has paved the way for many non-state new players in satellite design, production, launch and operation.

4. Within the **New Space** phenomenon, the design and production processes related to space vehicles are now reduced in terms of time and cost by one tenth, one percent, or even one thousandth, and the number of satellites launched and put into operation is not expressed with tens, but with thousands. Design and production times decreased from years to months, satellite sizes and masses from tons to even less than kilograms and costs also fall from a hundred million dollars to million dollars and below.

5. The satellites of the new space operate in almost every area of space utilization. Earth observations, communication, technology development and scientific applications are the main focuses of space studies. In the fields of observation and communication, practices that are not thought about it or that are believed to be possible only by large financial, technological, state, companies or universities, are on the way to quickly becoming coverage. These include taking photos of any point in the world at least five times a day, providing video from space and providing direct internet access to the entire world via satellite sets in low ground orbit. In another application, the position of the driverless autonomous cars is opening by determining the position with only 15-20 cm error.

6. Among the new players created by this paradigm are newly established firms and also universities that had no previous space experience. Particularly in the US, some companies established by people that have visionary view, have successfully completed large satellite projects using venture capital by bringing together engineers and operators who have no previous space experience but have high technological capabilities. Settled large space companies are trying to get on this train by following them from their behind.

7. The concept of the New Space creates great opportunities to enter space studies for states that have not yet reached space with their own vehicles. The train has not yet escaped for this group that Turkey is also found in. With political and financial support, they can quickly move towards becoming "space-capable" in a short time.

8. **CubeSat** was the most prominent example of the **New Space**, which started the downsizing trend. This satellite type, whose basic size are well defined but growing up to 27 times in scale, with the release of many subsystems and components as ready-made shelf products; quick design, production and launch facilities have emerged.

9. Cube Satellites (Pico: 0.1-1 kg, nano: 1-10 kg or micro: 10-100 kg) or non-cube satellite micro-satellites, have led many countries and private enterprises to enter space technologies and applications, whether they are wealthy or space-capable. With the rapid growth of this area and the number of satellites launched in 2017 and 2018 is expected to increase in the coming years and reach new records.

10. International cooperation has been an important motivation of this rapid development. The support of the United Nations and some states, such as Japan, in both satellite design and production and free launch has played an important role for those taking the first step into space.

11. It is of great military importance as well as the civil economic benefits of space. It gives military forces high level superiorities that cannot be obtained from the earth such as exploration, intelligence, navigation and communication. This feature of space, together with other civil-use practices, revealed the need for an international regulation and led to the emergence of **Space Law**.

12. Studies on the development of space law are being carried out in various environments, mainly UN-based, since 1957 launch of Sputnik 1 that the first artificial Earth satellite. In 1959, **the Committee on the Peaceful Uses of Outer Space** (COPUOS) was established within UN. In 1967, under the leadership of this committee, **the Outer Space Treaty** (OST), which forms the basis of international space studies, a number of other regulatory agreements following to OST was presented and the declarations were issued. Although all these have the signature and approval of many states, there are still important issues that have not been generally agreed and these issues still discussed.

13. At the essence of other space agreements, especially OST, lies the principle of peaceful use of space. Free access and use of space have been accepted as the unhindered right of every state. In military matters, the use of weapons of mass destruction (nuclear, biological, chemical, radiological) has been prohibited in space, but no prohibition or provision has been imposed on other weapons.

14. Among the issues discussed in COPUOS and other UN environments, military use of space, satellite security, Moon and asteroid mining come to the forefront. In these issues, the views of the US and a few states against the views of many states.

15. The use of space in many civilian environments is now being addressed along with other current issues in the world. Climate change, environmental pollution, sustainability of agriculture and natural resources, energy and social development are now observable and foreseeable with data from space technologies. While observation from space provides important information on these issues, it also contributes to sustainable development with communication and navigation services.

16. While there was no central institution in Turkey to regulate space studies until recently, the establishment of the Turkish Space Agency in December 2018 was positively received with the hope that it would be qualified to fill this gap.

November 7, 2019, Istanbul