# Plan as a Legal Tool of the Development for the Space Industries in the USA and Ukraine: a Comparative Analysis

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*The article has covered a legal essence of a plan as a legal tool for developing space industries in the USA and Ukraine. The article has concluded that the plan is an objective occurrence because none of the successful space projects was implemented without it. The conclusion has been made that more effective plans are those which have the major task. Such specialized plans are the priority in the USA. Whereas complex plans for the development of the space industry are prevailing in Ukraine. They have shown their low efficacy. The form of a plan's approval does not mean much for its effective execution. The*

*article suggests applying space planning for the program of missile system of double duty in Ukraine. This program should be implemented upon the principals of competition and equality of all forms of ownership.*

*Keywords: comparative analysis, competition, legal tool, plan, program, public administering, space industry, state, tender, USA, Ukraine.*

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## Introduction

The article has revealed the legal essence and practice of plans' application as some legal tools of the development of the space industries in the USA and Ukraine in their comparative analysis. Here is our scientific novelty. A plan as a legal tool of the development of the space industries in the USA and Ukraine. Is a provisionally determined an order of successively executed of a certain program in terms of the development of the national space industries. In the USA, space programs are considered to be special ones and they are approved according to an administrative procedure. Whereas in Ukraine, space programs are considered to be complex ones, and they are adopted in the form of law. It has been proven that the highest efficacy is ensured by some special space plans. We suggest space planning in Ukraine should be based upon the principals of competition and equality of all forms of ownership in terms of the development of missile systems of double duty. Theoretical and legal principals of the plan as a legal tool are defined in paragraph one. It was proven that programs of state space activities in Ukraine and the United States are tools for the activities of the subjects of public authorities, on the basis of which some new legal facts arise, ensuring the development of the space industry. However, in Ukraine, they are approved by the Parliament and have the legal status of legislation. In the United States, their approval is carried out administratively.

The second paragraph deals with the analysis of legislative settlement of the space industry in the USA. It was found to be the one of the most advanced and developed among all the major space states. Its principles establish competition among private companies in the USA and, at the same time, outline some preferences for them on the international stage in terms of the distribution of space-related services. According to them, the National Aeronautics and Space Administration (NASA) is turning into a typical contractor and carries out the function of oversight over the implementation of state space programs.

In the third paragraph, an analysis of the most outstanding space programs in the USA is made. With that, it provides some proof that all successful space programs in the USA were the special ones. Their provisions were focused on the plan, which had one major assignment. It was revealed that immediate space programs are not financially secured in the USA and Ukraine. They are just grounds for the inclusion of corresponding amounts in the state budgets' drafts. State funds for the implementation of space programs are allocated for each budget year by the country's legislative power. The fourth paragraph is devoted to the legal settlement of the space industry in Ukraine. A conclusion has been made- Space law in Ukraine is quite young and is on the way of its development. It primarily consists of three main sources. These are a specialized space legislation, provisions on state space agency and corresponding program for the development of the space industry that bears the status of law.

Much attention in the article was paid to the problem of the formation and implementation of space programs of Ukraine (paragraph 4). It was concluded that due to the implementation of the first space program of Ukraine, the national center for spacecraft control was established, and its work was adjusted. This above-mentioned center has been successfully functioning up to this day. In terms of the implementation of state space programs, no other significant achievements were attained. According to the authors, the low efficiency of the implementation of the national space programs of Ukraine was due to several fundamental and practical inconsistencies. The first reason is the dispersal of public funds to dozens of projects. As a result, none of them was properly funded. As well as the lack of competitive principles that dealt with the distribution of public funds. No tenders were held, and public financing was distributed according to departmental expediency. As for the practical inconsistencies, we emphasize that none of the programs was funded in full.

It is concluded that the National Target Scientific and Technology Space Program of Ukraine for 2021-2025 absorbed a significant part of the shortcomings of the previous space programs. After all, the funds are distributed among dozens of projects, which will not be enough for their implementation. From the content of the provisions of the draft program, the mechanism for distributing funds between designers and manufacturers of space products seems to be unclear. The authors express concern about a significant probability of the funds' allocation being carried out in a non-transparent (avoiding tenders) way. The authors suggest Ukraine should prioritize the program of development of a national dual-use missile system. The winners of the tender at the draft stage could become several companies. At the stage when a prototype is made prototype stage, there could be two or three winners.

## Theoretical and legal principles of the plan's issues as a legal tool

Ukrainian encyclopedists prove that "plan" is an idea, a project that foresees for the course, moves, or development of something. A preliminary outlined program of economic, cultural, defense and other measures, which provides a procedure and duration for their implementation. This is a text, a wording, and a document outlining the activities of the following program (Plan, 2022). In many cases, the means of the plan's execution is a "program." This is confirmed by the fact that according to the dictionary of the Ukrainian language, the category "program" is defined as a pre-thought-out "plan" of any activity, work, etc. (Program, 2022).

Therefore, there is no doubt that: firstly, the categories "plan" and "program" are closely intertwined as scientific categories; secondly, they complement each other; thirdly, the program can be a form (tool) for the implementation of the plan. The British Encyclopedia provides many special definitions of "plan." We are interested in the so-called five-year plans of pseudo-socialist countries. What once the Soviet Ukraine used to be. A plan, in this sense, is a method of planning economic growth for some limited periods using quotas. They were used at the beginning in the Soviet Union and later in other pseudo-socialist countries. For example, in the Soviet Union, the first five-year plan (1928-1932), which was implemented by dictator Joseph Stalin, focused on the development of heavy industry and collectivization of agriculture at the cost of a sharp drop in consumer goods. The Second Five-Year Plan (1933-1937) continued the tasks of the First Five-Year Plan. Collectivization combined with other Stalinist policies had led to a terrible famine killing millions of people. The Holodomor in Ukraine 1932-1933 is recognized as a factor in the genocide of the Ukrainian people. In China, the first five-year plan (1953-1957) emphasized rapid industrial development, which was a successful event in

general (Five-Year, 2022). In other words, in the pseudo-socialist countries, economic five-year planning was (and still is in China, Vietnam and North Korea) generally effective, but as a rule, it remains an anti-human tool for achieving goals by any means.

We want to emphasize that the space programs of Ukraine, although they are also planned for a five-year span (they are good for another five years), and this is practically the only coincidence with the economic plans of the previous (Soviet) era. The plan in the legal literature is usually interpreted as a pre-determined order, sequence of implementation of a certain program, work, events, etc. Accordingly, the act of planning can be defined as a decision of a subject of power, which determines the procedure, and sequence or which contains a connection of further actions and carrying out some activities. It is believed that the tool of public administering is precisely a plan's approval, which creates legal implications in the event of an occurrence, changes, or termination of the rights and creates some responsibilities for individuals. Planning is always based on the generalization of the current state and directed to a future development. Therefore, the focus on the future solution of the issue through the setting up of general goals and frameworks, attributing some features of certainty to future administrative activities is a key feature of planning. The next distinctive feature, which separates the planning acts from other tools of public administration, is that they ensure transparency for the activities by the subjects of power. The plans contain future measures, and they outline the outcome of these measures, indicating sometimes even the executors and deadlines. The legal significance of the plan as a tool of public administration means that it is an additional special means of achieving the desired in the future positive public outcome by adopting the relevant administrative acts aimed at the administrative activity of the entities of public administration (The administrative, 2021).

The legal character of plans in the field of space activities is not as unambiguous as the above-mentioned theoretical concept suggests. After all, most space programs in Ukraine bear all the features of a planning act. However, they are not approved by the decision of the administrative entity, but by the Parliament of Ukraine. This gives these planning acts a high level of legitimacy and specific features of interaction with other legislation of Ukraine.

Thus, the programs of state space activities in Ukraine, while being the tools of the subjects of authority's activity, are based on which new legal facts arise, ensuring the space industry's development. However, they have the force of law, which everyone knows is a high-level legal normative act. In such a system, there are certain discrepancies with the classical theory of law. We would say that the plans we have analyzed take their own special place in the law system. They seem to be an exception to the general theory in terms of a clear distinction between normative legal acts and individual acts. They bring in a certain hybrid legal essence.

Our study, using a comparative method based on the analysis of the USA experience, will be dedicated to its disclosure.

## Legislative regulation of the USA space industry

It is impossible to determine a place and role of plans (programs) in the space law of the USA, without having to analyze the most advanced and comprehensive space legislation in the world, according to our judgement. This is the legislation of the United States. Existing US space-related laws are compiled in section 51 of the US Code of Laws. This includes the following high-level normative legal acts: Communications Act of 1934, which although it had been adopted long before the first space flight. However, it was amended over time to

regulate some requirements for commercial satellite operations, licensing and coordination of radio spectrum's use. The National Aeronautics and Space Act of the United States. President Dwight Eisenhower signed it in 1958. The law defined the goals for NASA, as well as the United States in space, in particular, it aimed at expanding space knowledge, and creating and improving spacecraft. The law on commercial space launches was adopted in 1984 and modified later. It provides the US Department of Transportation with regulatory oversight over commercial space flights. It determines the rules for compensation to space companies of extensive damages inflicted on third parties and defines the rules for commercial human flights into space. The Land Remote-Sensing Commercialization Act of 1984 allowed the US government to outsource military space development to private industry, allowing private companies to control a constellation of satellites. The Earth Remote Sensing Principles Act of 1992 gave the Department of Commerce the authority to license and regulate the commercial remote sensing industry and the legal ability to outsource the development of new Landsat components to the private sector. The US Commercial Space Launch Competitiveness Act of 2015 was designed to encourage commercial spaceflights and innovations by simplifying regulatory oversight over private space companies until 2023; prolonging the period during which the government indemnifies commercial spaceflight companies for damages inflicted to third parties; and granting private companies the right to own resources harvested in space, such as materials from asteroid mining. The Weather Research and Forecasting Innovation Act of 2017 authorizes the use of commercial weather satellites and allows NOAA to purchase weather data from commercial weather satellites. The National Aeronautics and Space Administration Transition Authorization Act of 2017 – on transition of the National Aeronautics and Space Administration and exploration of outer space as of 2017. The act focused its legal impact on long-term deep space exploration, investments in science, technology, and aeronautics, as well as the development of a commercial space sector. The law emphasizes maintaining the continuity of NASA's purpose across presidential administrations and includes legal provisions to ensure medical treatment for astronauts whose health is harmed during space missions. The National Defense Authorization Act of 2020 creates the US Space Force as part of the US Air Force. It defines the tasks of the new military service, membership, general responsibilities and chain of command (Space, 2022).

## US space programs and the legal mechanism of their funding

With perfect legislation, the US national public administration implemented a series of successful space projects. Since its founding in 1958, NASA has implemented many of the most challenging projects. Among them are Pioneer, Mercury, Voyager, Space Shuttle, Cassini-Huygens, New Horizons, and James Webb. Project Mercury was the first American human spaceflight program. There were 25 flights, six of which carried astronauts between 1961 and 1963. The program objectives were to put a spacecraft with people on board into orbit around the Earth. To study the human's ability to operate in space. More than 2 million people from government agencies and the aerospace industry combined their skills, initiative and experience to make the project a reality (Human, 2018).

In our opinion, the most ambitious of all US space programs was the Apollo space program, which ensured the landing of humans on the surface of the Moon. It began in 1961 and was completed in 1975. Its beginning is associated with the initiatives of US President John F. Kennedy. It resulted in an unprecedented space achievement to date. When on July 20,

1969, Neil Armstrong walked on the surface of the Moon for the first time in human history. Over the following several years, 10 more astronauts would follow in Armstrong's footsteps under the Apollo program. The last landing on the Moon took place in 1972. During the Apollo mission, several scientific and technical assignments were gathered. Some samples of lunar rocks were collected and delivered to Earth for research purposes (The Apollo, 2007).

No less grandiose and still ongoing is the US space program Voyagers functioning today. It provided an unprecedented flight of man-made spacecraft to the very edges of the Solar system and further into interstellar space. Voyager-1 and Voyager-2 probes were launched back in 1977. In a decade, they have reached the gas giants Jupiter, Saturn, Uranus, Neptune and their respective satellites. Spacecraft have provided humanity with some stunning images and data about the outer planets of the Solar system and their plentiful satellites. Voyagers are the only human-made spacecraft that have managed to go beyond the Solar system. They are continuing the active stage of flight. Over time, Radioisotope Thermoelectric Generators (RTGs) will exhaust their life. Nevertheless, for millions and possibly billions of years, Voyagers will be carrying in the Milky Way galaxy some information about the Earth and humanity from the second half of the twentieth century. After all, on the gold carriers that are located on Voyagers, there are some records with images, greetings and sounds of people and the Earth (Malik, 2008).

The achievements of the US specialized space programs are impressive. Some of them were carried out in an international format. However, the US scientific and financial contribution to international space programs has always been preeminent. Even enumerating them all would take too much time. Therefore, we will name only some of them. NASA's reusable winged space shuttle program. These are the programs of the Mars rovers that found evidence of surface water in the ancient past of the planet, and explored meteorites, craters and other Martian sites. The program is a large space observatory with the Hubble telescope, enabling astrophysicists to deepen their knowledge about the remote Universe and change their perception of it.

So, the main feature of space programs in the United States is that they are all well-specialized. They are aimed at one, though grandiose, but a specific goal. The management, scientists and other personnel who carry out such programs are literally driven to achieve a positive result. They cannot exist in another paradigm. Planning and executing space programs are a kind of a show in the United States, which is being watched by tens of millions of US citizens, and sometimes by hundreds of millions. Accordingly, the results, the challenges of funding, the items of expenditure of space programs are under the scrutiny of journalists and other civil society actors. In recent years, NASA has increasingly delegated the function of space programs to private businesses, which, in turn, is already independently planning and implementing space programs on a planetary scale.

Funding for space programs in the United States is not directly based on the provisions defined in the space programs. After all, NASA's budget is set by an annual national financial process that begins with a proposal from the White House and ends up with the passage of a legislation by Congress and the signing of the President. The budget determines the amount of funding for programs and projects in the area of human space flight, space science, aeronautics, technology development and education. NASA's budget reached its peak during the Apollo program in the 1960s. After the US won the Moon race, space exploration lost its political support, and NASA's budget was significantly decreased. Since the 1970s, NASA has ranged from 1% to 0,5% of all US state's expenditures. The majority of US government spending is covered by social security programs and is not subject to annual approval by Congress.

These expenditures are called "mandatory." Only about 30% of all US government spending each year require Congressional approval – this category of spending is called "discretionary." The Ministry of Defense and defense-related activities account for approximately half of all discretionary spending. All other government agencies and activities, including NASA, are funded from the remnant amount. For example, in the fiscal year 2020, the US government spent approximately $6,6 trillion, of which only 0,3% ($22,6 billion) was allocated to NASA (Your Guide, 2022).

Each February, the White House provides Congress with a detailed budget proposal that begins the annual process known as the appropriations process. The proposal that starts this process is called the President's Budget Request or PBR, which itself is the result of years of negotiations, first with NASA and then between NASA and the White House Budget Office. The President's budget request contains justification and clarification of all space agency activities. It may also contain some proposals for canceling projects or starting new ones. The priorities expressed in the budget request reflect the priorities of the President, and the document can just as easily be perceived as a political declaration of the executive branch. The President's budget proposal does not have the binding force of law and does not determine funding, although it does set the terms for the funding bill that Congress subsequently writes. After the White House submits its budget proposal to Congress, the key congressional committees in the Senate and House of Representatives then draft legislation to fund NASA. Through this process, Congress decides whether to accept or reject the proposals contained in the President's budget request and whether Congressional funding levels for NASA programs and initiatives will meet, exceed, or be less than the levels submitted by the President. The law must be passed by Congress and signed by the President before the start of the fiscal year on October 1. If not, NASA loses the authority to spend money and cannot meet contractual obligations, pay salaries, or otherwise continue to function. NASA's budget in 2021 was $23,3 billion, and in 2022 – $24 billion, which is 0,4% of the total US government expenditures. The NASA budget for the fiscal year 2023 is projected at $26 billion for NASA, which is 8% more than the amount granted by Congress last year. NASA breaks down the budget. This is an internal division into the main program areas, each receiving funding to manage its projects. Funding varies from year to year, but in general, about 50% of NASA's annual budget is spent on human missions in space, 30% on robotic missions and scientific research, and the rest is distributed between aeronautics, technology development programs, staff salaries, facility management, and other overhead costs. No part of NASA's budget is used for national defense or intelligence acquisition programs; it is a civilian agency responsible for peaceful space exploration. National security space programs are the responsibility of several other agencies, including the Space Corps and the National Intelligence Office (Your Guide, 2022).

## Normative and legal regulatory framework of the space industry of Ukraine

In Ukraine, the relevant Law of 15.11.1996 No 502 "On Space Activities," defines the general legal principles of space activities in Ukraine and under the jurisdiction of Ukraine beyond its borders. The provisions of this Law apply to all activities related to the exploration and use of outer space. According to it, space activities are scientific space research, the use of outer space, the development, production, maintenance and testing, operation, and management of space objects (including their units and components), launch ensuring, launch and return

of spacecraft and their components from outer space to Earth. Article 7 of the Law as of 15.11.1996 No 502 defines the principles of the national target scientific and technical space program of Ukraine. It stipulates that space activities in Ukraine are carried out on the basis of the National Target Scientific and Technical Space Program of Ukraine, which is developed for five years and approved by The Supreme Council of Ukraine upon submission of the Cabinet of Ministers of Ukraine. The formation of the National Target Scientific and Technical Space Program of Ukraine is carried out by a central executive authority, which ensures the formation and implementation of state policy in the field of space activities, together with the relevant central executive authorities and the National Academy of Sciences of Ukraine proceeding from the purpose and basic principles of space activities in Ukraine. On the basis of the National Target Scientific and Technical Space Program of Ukraine, the following things are carried out: determination of the need for space equipment for civil, defense, and dual-use purposes, as well as signing contracts in accordance with the current legislation for research and development and production of space equipment for the upcoming year, approved by the Cabinet of Ministers of Ukraine; allocation of funds from the State Budget of Ukraine to finance space activities under state procurement; training of personnel at the expense of the State Budget of Ukraine; and taking appropriate measures for the social protection of personnel of space facilities; ensuring support and improvement of space facilities and on-ground infrastructure, as well as the necessary level of safety of space activities; ensuring international cooperation in the space sphere, including Ukraine's participation in international space projects (On space, 1996).

An important source of space law of Ukraine is the Regulation on the State Space Agency of Ukraine, which was approved as a secondary normative and legal act by the Resolution of the Government of Ukraine No 281 as of May 14, 2015 (Provision, 2015). The State Space Agency of Ukraine is the central executive body whose activities are directed and coordinated by the Cabinet of Ministers of Ukraine through the Minister for Strategic Industries and which implements a state policy in the area of space activities. In particular, the State Space Agency of Ukraine, together with the relevant central executive authorities, exercises control over the targeted and efficient utilization of public funds provided for implementing projects and the execution of programs (Tasks, 2022).

## Space programs of Ukraine and factors of their financial support

The state budget of the first space program of Ukraine 1994-1997 was $1,115 billion. These is not bad funds for that time. However, they were dispersed among more than fifty projects. Of these, there was only one successful project – the creation of the Satellite on-ground Control Center. The second space program, 1998-2002, was supported by the President of Ukraine Leonid Kuchma (1994-2004) (On the Nationwide, 1997). Despite this, no significant progress in the space sphere has been achieved since then. A significant budget resource was practically squandered (Krasnomovets, 2022). After all, the reform of public administration of the space industry was not implemented. For the sake of objectivity, it should be noted that at that time, Ukrainian astronaut Leonid Kadenyuk made a successful space flight under the US program and a conventional project of the commercial launch of boosters, "Sea Launch," was implemented. However, those were separate international projects that were not encompassed by the Program for 1998-2002. The third state space program of Ukraine for 2003-2007 was marked by big plans and even bigger scandals. Ukraine's newest booster "Cyclone-4" remained

only a project. The joint spaceport project with Brazil was not implemented (Leschenko, 2016). The Fourth National Target Scientific and Technical Space Program of Ukraine for 2008-2012 set the task to reform the public administration of the space industry to ensure the development and effective exploitation of Ukraine's space potential. However, there were neither effective reforms nor significant achievements. For example, "Land Launch" from the Kazakh side of Baikonur, for a launching position of the Ukrainian booster "Zenit-2" failed to withstand political miscalculations and business competition (Feldman, 2015). Similarly, there is nothing to be proud of if we analyze the results of the fifth space program for 2013-2017. Although it should be objectively noted that the Program for 2013-2017 was not funded even in the minimum required amount.

Under current conditions, the Parliament of Ukraine adopted in the first reading the draft law of Ukraine as of October 4, 2021, "On approval of the National Target Scientific and Technical Space Program of Ukraine for 2021-2025." Ukraine has a unicameral parliament. Accordingly, it adopts the law in two rounds. In the first reading (preliminary) and second reading (final) (Parliament of Ukraine, 1996). The analyzed draft law of Ukraine was submitted to the Parliament by the Government of Ukraine (Passport, 2022). The Draft Program for 2021-2025 instructs the Cabinet of Ministers of Ukraine, when preparing the draft law on the State Budget of Ukraine for the relevant year, to provide for the allocation of funds for the implementation of activities defined by the National Target Scientific and Technical Space Program of Ukraine for 2021-2025, based on the financial capabilities of the State Budget of Ukraine. Addendum, 1 to the analyzed draft law of Ukraine, stipulates that the Ministry of Strategic Industries of Ukraine should be the coordinating state customer. It is planned to appoint the Vice Prime Minister of Ukraine – Minister for Strategic Industries of Ukraine, as the Program Director. Enterprises, institutions and organizations, regardless of their form of ownership, should be involved in the implementation of the program's activities. The period of implementation of this program should encompass the period up to 2026 (On adoption, 2022).

Addendum 2 defines the tasks and measures for the implementation of the National Target Scientific and Technical Space Program of Ukraine for 2021-2025. Paragraph 4 of which is directly devoted to the creation of rocket and space technologies. In total, it is planned to allocate UAH 7607.8 million from the state budget and UAH 23350,01 million from other financial sources. Addendum 2, in its turn, is divided into three subparagraphs. The first of which covers the creation of space-rocket systems and their separate components. In particular, it is planned to create a medium-class space rocket system "Cyclone-4M" and prepare the production of the corresponding booster. For this purpose, it is proposed to raise UAH 5311 million of extra-budgetary funds. To create a space rocket complex of a light class of sea-based with a budget allocation of UAH 4800 million. In our opinion, the creation of a light-class space rocket system (according to our classification "Sea Launch-2") is practically planned in the Draft Program 2021-225 as a basic one. The development of a light-class space rocket system "Cyclone-1" with a plan to attract UAH 3978 million of off-budget funds.

It is planned to attract UAH 2475 million of non-budgetary funds for the development of an aerospace rocket system with an ultralight class booster. The creation and production of liquid propellant rocket engines for advanced boosters at the expense of the state budget is planned to cost UAH 102,5 million of state funds. It is planned to attract UAH 3162,50 million of extra-budgetary funds for the serial production of components of Antares and Vega boosters. Creation of the heavy class space rocket system "Zenit-7N" with a planned attraction of UAH 8387,51 million of extra-budgetary funds. In total, it is planned to attract

UAH 5902,5 million from the state budget and UAH 23314 million from other sources of financing for the creation of space rocket systems (Tasks, 2022).

Subparagraph 2 of paragraph 4 of Addendum 2 of the National Target Scientific and Technical Space Program of Ukraine defines the tasks and estimated costs for developing and implementing critical technologies to manufacture rocket and space technology to solve the problems of import substitution. Namely, the question of introducing technologies to manufacture hull elements of boosters from composite materials by automated manufacturing methods. They are planned to be carried out by allocating funds from the state budget in the amount of UAH 448,3 million. The development of technology for the manufacture of liquid rocket engine elements using innovative additive technologies and rotational extraction to improve the production technology of laser gyroscope components for boosters' control systems is planned to be carried out at the expense of UAH 104 million of the state budget (On adoption, 2022).

In subparagraph 3 of paragraph 4 of Addendum 2 of the National Target Scientific and Technical Space Program of Ukraine, it is planned to carry out search activities related to creating advanced rocket and space technology designs. To analyze the possibility of creating and operating on-ground and boosters of space rockets, it is proposed to allocate UAH 36 million from other sources of funding other than the state. Development and research of advanced samples of components of boosters' control systems will cost the state budget 170.5 million UAH. In addition, the creation and research of advanced samples of rocket engine components are planned to be carried out at the expense of the state budget of Ukraine in the amount of UAH 315 million (Tasks, 2022).

Hence, the analysis of the retrospective of the implementation of state space programs in Ukraine clearly proves that complex programs in their content lead to the dispersion of budget funds. Moreover, they become a factor of mutual dependence between Ukrainian space equipment manufacturers. When each of them gets a small share, which is not sufficient for the implementation of the project. However, its own share, which can be spent on ongoing activities without even dreaming of the final result. Each of the heads of the state space enterprise, who managed to snatch a small part of the budget funds, turns from the creator of new space technology into an opportunist, who, in accordance with the current legislation, consumes the small funds allocated by the state for current expenses.

Conversely, in those few cases when Ukraine implemented a specialized space program, for example, "Sea Launch," there was some success. This is confirmed by the successful experience of the United States. Most of their space programs were specialized. It is clear that Draft Program 2021-2025, which has been agreed at all levels, cannot be radically changed. However, in parallel, and even more so for the future, Ukraine should adopt specialized top-priority projects of space programs. And Ukrainian and national businesses of the EU member states should be involved in their implementation on a competitive basis. The latter are subject to co-financing from the European Space Agency. At the same time, at the design stage, it is expedient to have several winners who will work in parallel in a competitive environment. The higher the level of development, the less parallel work will be. The one who offers the best compliance with the characteristics of the space product specified by the state tasks and the price-quality ratio should be selected for serial production.

In addition, we believe that with the lack of state financial resources, the priority of the space industry development should be the project of our own dual-purpose rocket and space industry. This is partially confirmed by the opinion of Volodymyr Taftai. He believes

that the prospective directions for the development of the space sphere of Ukraine should be the creation of its own modern Earth observation system with the appropriate on-ground infrastructure; the creation of its own rocket and space system; and space integration of the European Space Agency and the United States (Taftai, 2022).

Fully supporting the above-mentioned three priority activities of the State Space Agency of Ukraine, I would like to express my own view on the first of them. After all, Ukraine has a highly effective system for managing remote Earth observation. Thus, the management is carried out by Ukrainian specialists mainly not by their own, but by leased satellites of the United States, the European Space Agency, China, Israel and even owned by Ukrainian volunteers. Accordingly, the control system of remote sensing satellites does not need to be created anew, it must be filled with modern technological means that will be synchronized with European and American satellites. In addition, we would like to emphasize that the creation of new domestic satellites of remote sensing based on the existing outdated Ukrainian technology will be an unreasonable management decision from the point of view of finances, time and quality. In this direction it is necessary to use some business potential of private space companies of Ukraine, EU member states and the USA. against the state-guaranteed procurement. For example, the resolution power of some promising Western-made satellites is up to several centimeters (Zhao et al., 2022). This is despite the fact that the state space project plans to create and launch into orbit a Ukrainian satellite with a resolution of 5 meters at the first stage of its implementation (On adoption, 2022). That is not a well-balanced spending of public finances. After all, in today's conditions, such a resolution is typical for educational and satellite universities and private ones that deal with this issue like a hobby.

## Conclusions

The United States and Ukraine are space powers. The space industry in the United States is flourishing, whereas in Ukraine is in decline. Ukraine inherited a developed complex of design and construction of boosters from the past era. In Ukraine, public administration of the space industry is carried out on the basis of the relevant legislation, the Regulation on the State Space Agency of Ukraine, and the program for the development of the space industry. The latter is approved by the Parliament of Ukraine. It has a high status in the law. Implementing previous space programs ensured the creation of an effective national satellite control system with appropriate on-ground infrastructure. There are no other significant achievements in the space industry in the process of implementing complex space programs. This happened due to: 1) the dispersal of funds allocated by the state in space programs between a significant number of state-owned space enterprises; 2) lack of competition between space entities; 3) prolonged non-admission of private space companies to space activities (until 29.01.2022). As a result, – the lack of competition in the space industry among domestic and foreign public and private companies. It is proved that Ukraine has had certain achievements in the space sphere. However, they were achieved outside the framework of integrated space programs, in other words, they were carried out under separate specialized programs. As it is successfully has been done in the United States.

The draft of the National Target Scientific and Technical Space Program of Ukraine for 2021-2025 is characterized by the shortcomings of previous space programs. The planned funds are distributed among dozens of projects. Most of the allocated funds will not be sufficient. Thus, once again, state space companies will be implementing the allocated funds,

and not focusing on the final result. In addition, the draft program has an obscure mechanism for the distribution of funds between designers and manufacturers of space products. Will it be carried out by means of transparent tenders? Or on the basis of departmental state lobbying distribution. Depending on the answers to the latter questions, it is possible to forecast the success or ineffective use of public funds allocated for the space industry. If the funds are distributed according to the second method, then the Ukrainian people cannot expect some significant positive results from the implementation of the analyzed draft of the space program. If transparent tenders are held, then the winners will be able to attract non-budgetary funds for the implementation of projects in addition to State funds.

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