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# UKRAINE SPACE SEGMENT AND EUROPEAN SPACE AGENCY COOPERATION CAPABILITIES

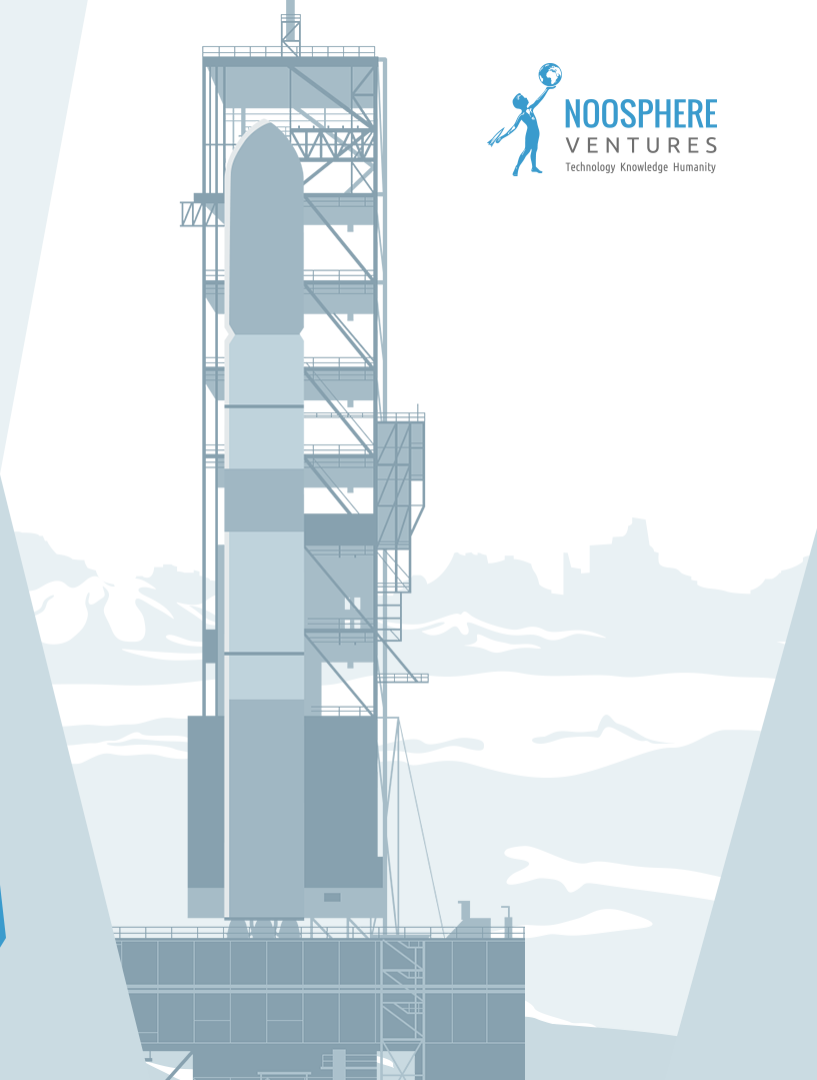


Ukraine has been passing a long way of development and formation since its independence. It already established itself as an equal participant in international processes and programs

It continues to amaze the whole world with its resilience in confronting one of the strongest armies in the world.

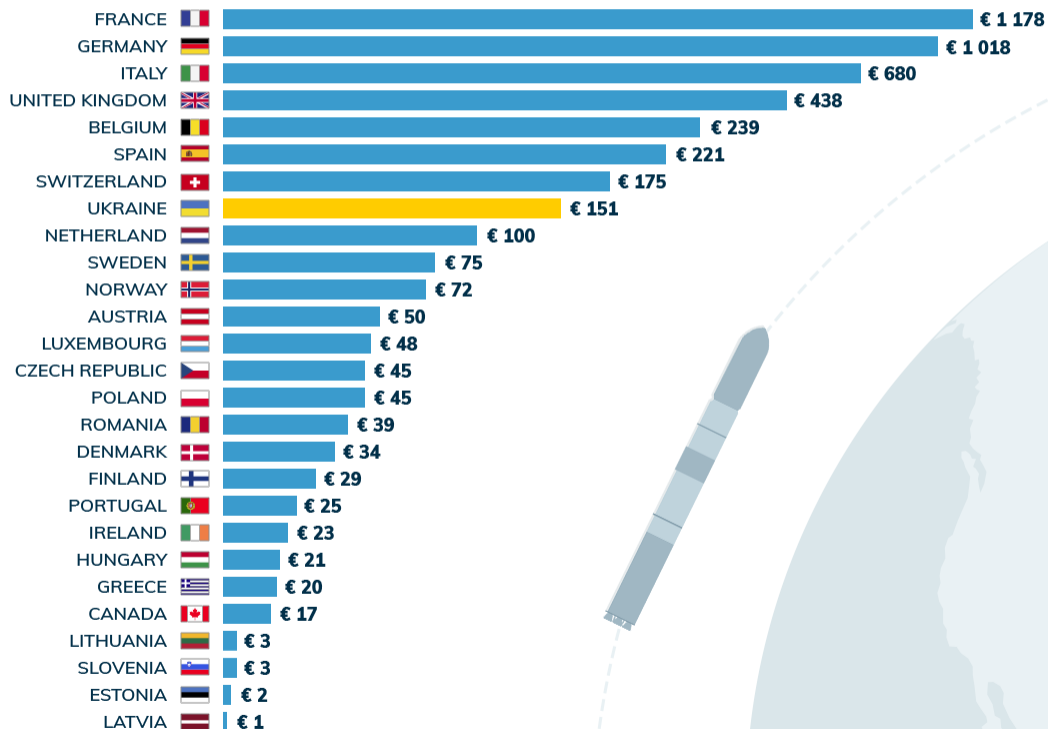
Ukraine is also strong in technical and scientific aspects. It has huge experience and technical base for the development of the space sector. The experience has already been collected over three generations.

But cooperation with our country is of a pinpoint nature. Thus, there is a loss of opportunities and mutual benefits from using the potential of all participants in joint projects - for the sake of which technological unions between countries, such as the European Space Agency, are created.



# UKRAINE WILL BE THE ONE OF THE BIGGEST FORCES OF ESA

ESA budget by member contribution, in comparison with the space budget of Ukraine



The space sector of Ukraine has been developing steadily in recent years. Prior to the full-scale war, the government approved a budget for the country's 5-year space strategy. According to this, it was planned to finance the entire sector by **€151 million only in 2022**. And after the end of the war, this figure is likely to increase.

Thus, Ukraine can co-finance ESA programs and will become one of the top 10 European countries in this regard.

# UKRAINE WILL BE THE ONE OF THE BIGGEST FORCES OF ESA

## Factors guaranteeing the development of the space sector of Ukraine:



Ukraine has a great space heritage. Government enterprises have a huge legacy in the space sector since the days of the USSR. In addition, 3 generations of engineers have grown up in the country. They are hungry for new developments and adapting old technologies to modern requirements.



The government promotes the development of the space industry in the country. One of the first laws passed during Zelensky's term was the Law on the Regulation of Space Activities, which allowed private companies to engage in space technology and led to the emergence of dozens of private space companies.



After the war with Russia, Ukraine is obliged to build up its forces in space. The war with Russia showed how important it is to have own space technologies and dual-use technologies due to a number of reasons.

## Factors that hindered the development of the space industry in Ukraine:



"Loneliness" of Ukraine in this sector. The development of space technology without permanent international partners and the exchange of expertise is a daunting task.

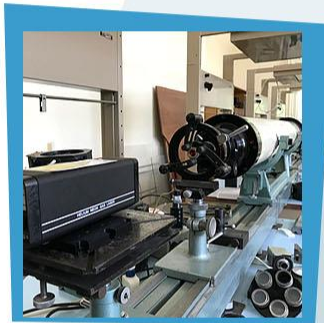


Failure of the Russian Federation to fulfill its obligations. Russia has let Ukraine down in all joint projects (Lybid, Sealaunch etc.).

# BENEFITS FROM UKRAINIAN CONTRIBUTION IN ESA

## Economy

- Ukrainian will be a top-10 ESA countries by its investments in space activities
- Access to the modern, common applicable and inexpensive Ukrainian aerospace RnD centers/facilities.
- Experienced, but cost effective workforce (cost in EU is 7 times higher per month)
- Simple iteration with contractors (work with 1 company – get experience and knowledge of the whole niche cluster)

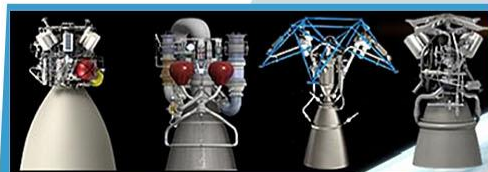




# BENEFITS FROM UKRAINIAN CONTRIBUTION IN ESA

## Access to the Ukrainian Expertise and Technology Transfer

- Ukraine could become a subcontractor for the important components as thrusters, electric thrusters, chemical engines, satellite adapters, in-orbit service etc
- Air launch IP and technologies (Air launch, Mriya projects) for different inclination orbit for countries without its own capabilities
- Access to the VAS company and its expertise of the submeter images processing for military needs
- Ukrainian experienced staff, already involved in the international space projects as an advisors and mentors



# BENEFITS FROM UKRAINIAN CONTRIBUTION IN ESA

## Speed up the development of the current ESA Projects

- Exomars - lander technology of the Ukrainian Yuzhnoye SDO
- Easy replacement of the Russian contractors in the main ESA projects
- Ariel project – Ukrainian supply its chemical thruster
- More satellite data for the Copernicus program

## Strengthen ESA position in front of USA and China

- Increase of experienced staff (Ukraine expertise since 1950). To stop brain migration to Asia and USA but rather involve talents in own projects
- ESA will get access to IP and in such a way avoid the technology transfer to the Asian markets and migration of the experienced staff to USA
- Logistic advantages – easily and quickly transport of the space equipment and components by land, air or sea (even heavy cargos)
- Ukraine will become a standing customer for ESA launches - launch of the 7 EO satellites with plans for increasing EO capabilities (replacement of the Space X)

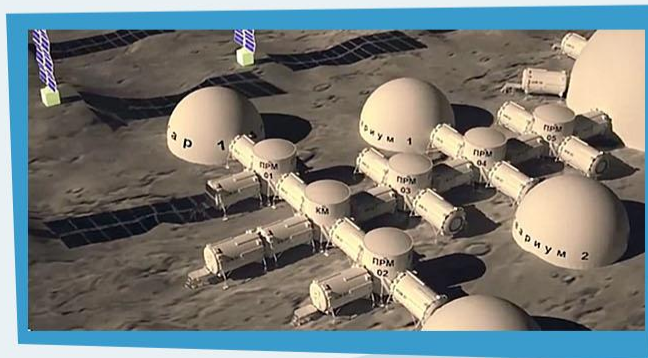


# UKRAINIAN EXPERIENCE IN THE ESA COOPERATION

UA is working with ESA since 1999 under its standards and certifications. It is informal member of the ESA for a long time, but both sides don't get all benefits until Ukraine becomes its fully legitimate member.

## Existing projects with ESA:

- Mriya – potential air launch project
- Member of the Lunar Moon Village Association with the Moon Village modules concept since 2018
- SES-17 – Ukrainian FED was a subcontractor for Thales Alenia Space (supply of thermal hydraulic accumulator) in 2021





# UKRAINIAN EXPERIENCE IN THE ESA COOPERATION



## Existing projects with ESA:

- Horizon 2020 – composite developments since 2016
- Vega – forth stage engine development by Yuzhnoye SDO and Yuzhmash since 2012
- Galileo – Ukraine is an operator of RIMS since 1999



# HOW POLAND'S ACCESSION TO THE ESA AFFECTED THE COUNTRY'S SPACE INDUSTRY



Poland's cooperation with ESA began in 1994, and the country became a full member in 2012. Prior to that, it was represented by only a few scientific institutes prior, joining the ESA had a significant impact:

Joining the ESA had a significant impact on the Poland 's space industry :

- Presented Poland companies to the European market, that lead to verification of its technologies on the international market.
- The country was mentored by ESA, which guided the development of the space industry in the country. Now Poland is ready to independently manufacture scientific Nano-Satellites and larger remote sensing satellites (MikroGlob), and communication satellites (EXATEL)
- Students gained access to European space education programs
- Commercialization of the Polish space industry, which contributed to the rapid growth of new companies (from few research institutes to 66 private space companies in the country).
- Has gained accessed to ESA tenders. Number of Polish companies registered in EMITS ESA Tender System has been increasing more than 10 times since 2012
- The country gained access to the European LV (Vega) to launch its first satellite.

# BOOST OF UKRANIAN SPACE INDUSTRY WITH ESA

