

# Kazakhstan Space Industry

April 20

Ghalam Engineering Design Office



# Space Industry

Министерство цифрового  
развития, оборонной и  
аэрокосмической промышленности  
Республики Казахстан

қаз. Қазақстан Республикасының цифрлық  
даму, қорғаныс және аэроғарыш өнеркәсібі  
министрлігі



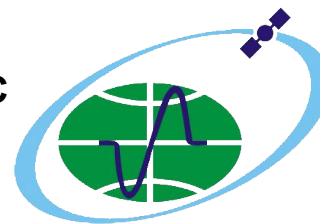
КАЗКОСМОС



ИнфраКос



РЦКС



ИКТТ

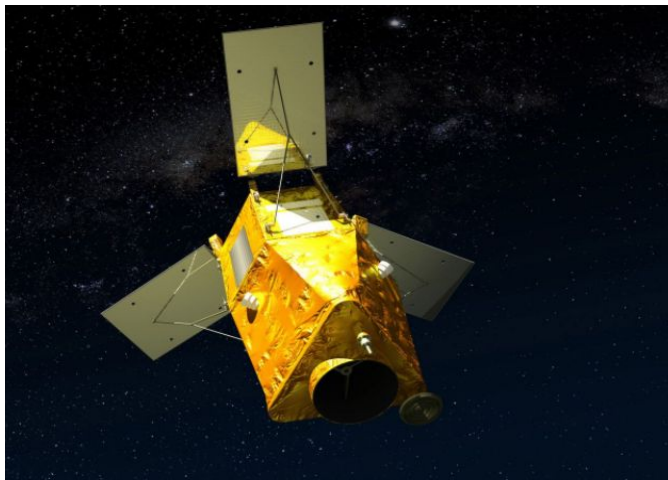


БАЙТЕРЕК

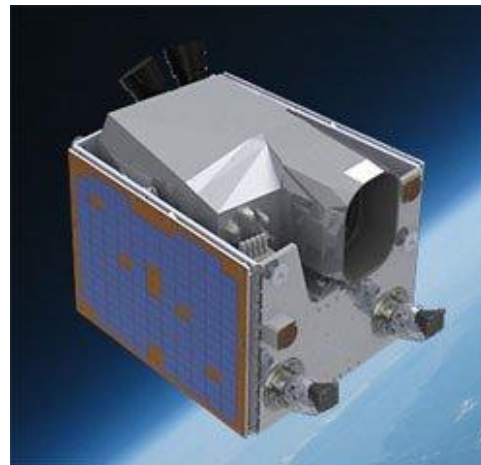
СОВМЕСТНОЕ КАЗАХСТАНСКО-РОССИЙСКОЕ ПРЕДПРИЯТИЕ



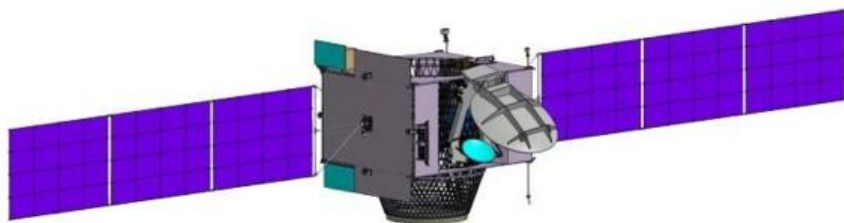
# KazEOSat-1



# KazEOSat-2

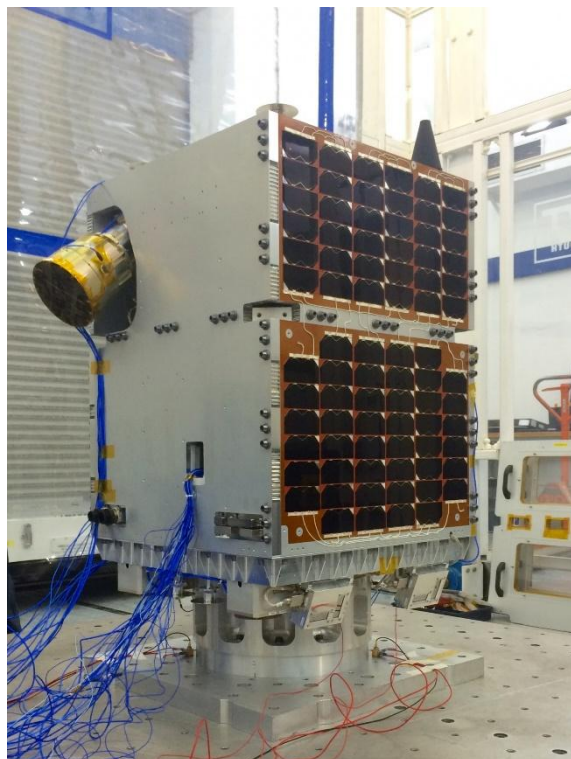


# KazSat-2

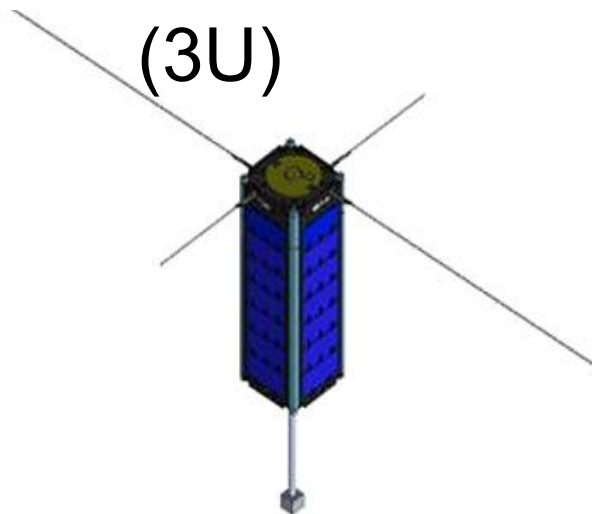


# Technological & scientific satellites

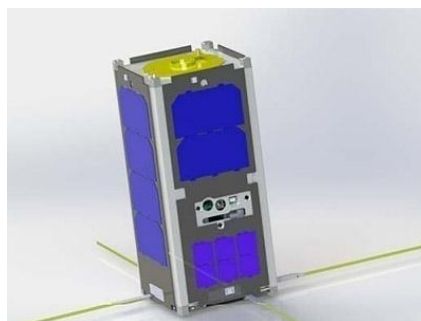
KazSTSAT (microsat)



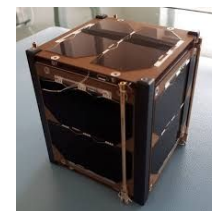
KazSciSat  
(3U)



Al-Farabi-1 (3U)

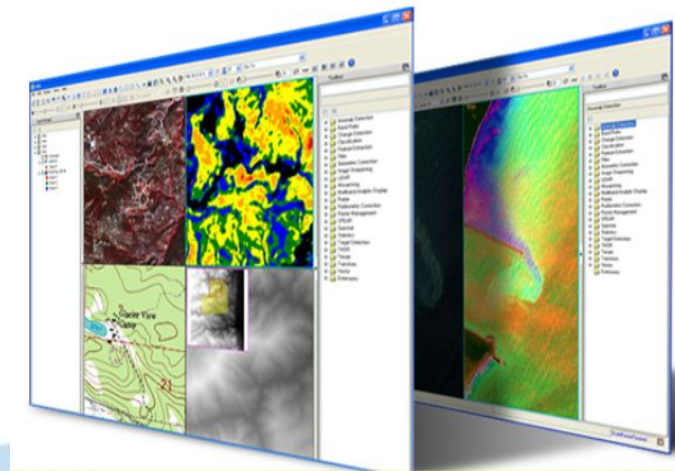
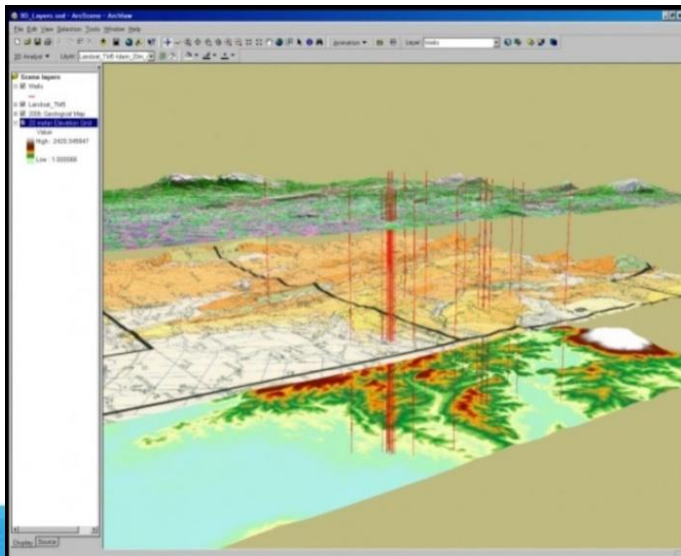
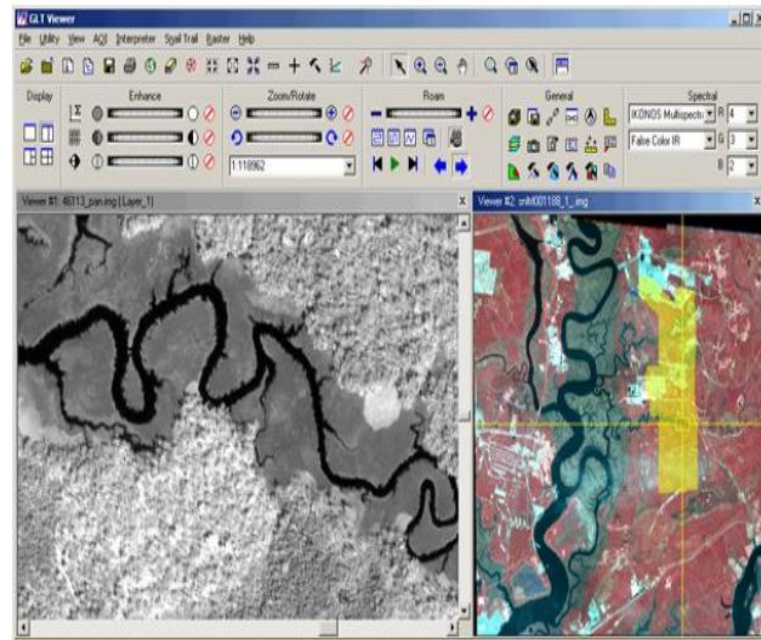
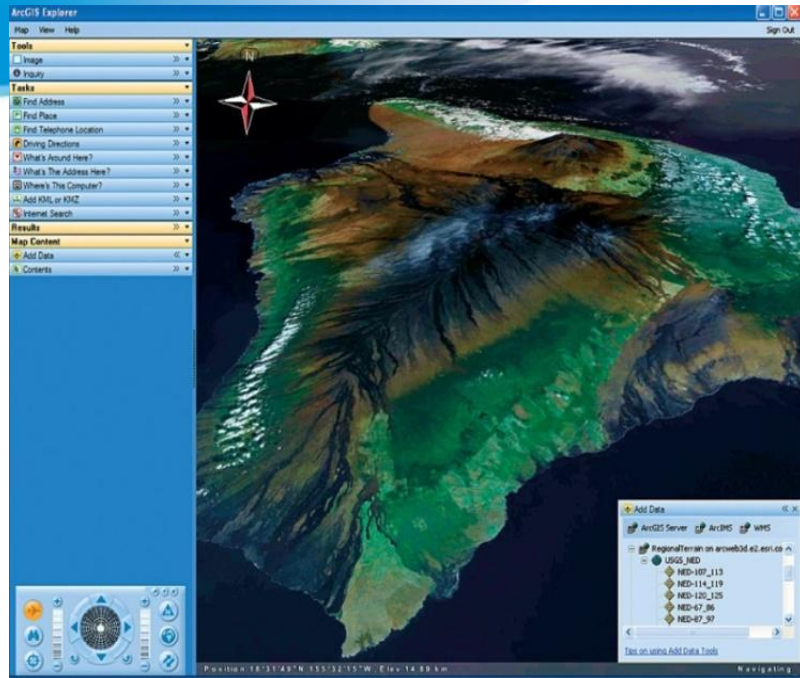


Al-Farabi-2 (1U)





# EO Services





# National Space Center

Kazakhstan Space Center





# Assembly, Integration and Testing Complex



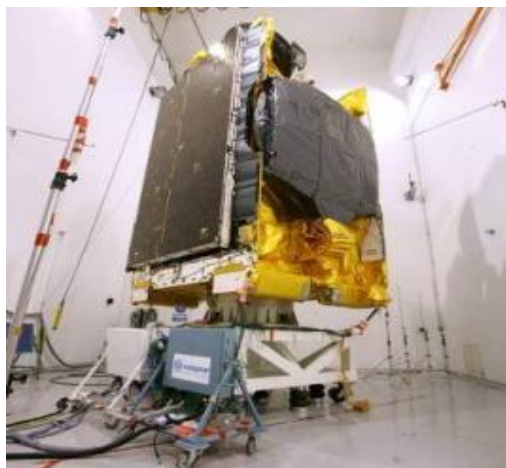
ThermoVacuum testing



Electro Magnetic Compatibility testing



Radio Frequency testing site



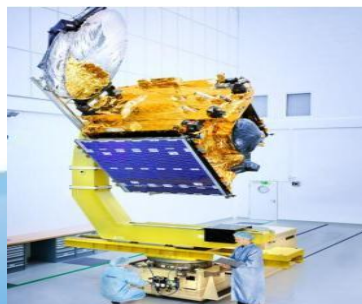
Acoustic vibration testing



Vibration benches



Integration and Functional testing site



Mass Properties Measurements

# Precision mechanics workshop

This workshop includes blanking shop and finishing shop. The blanking shop is capable to perform welding, cutting, bending and assembly operations. The finishing shop will be equipped with 4 CNC machines with 5 processing axes manufactured by DMG and measuring and control machine. These machines is able to produce products of any complexity with dimensions up to 4500x700x1000 mm with 0.01 mm accuracy.





## 3D printing workshop

The 3D printing workshop is dedicated for parts production by the selective laser melting method from powders of various metals and alloys. This technology allows to produce parts that are impossible or difficult to produce by other methods. The technology provides the strength of the parts comparable with casting. The dimensions of the working chamber (the maximum possible size of the parts) is 25x25x28 cm.



# *Electrical Harness Production*

The harness workshop is dedicated for the production of space application harness. At the workshop, can be performed any operations with the harness. The workshop located in the multi-purpose clean room facility. The cutting and marking workshops located nearby. The storage area located in a ISO 8 clean room and gray area.





# MLI production workshop

The Multi-layer insulation workshop is dedicated for the production of Multi-layer insulating materials to ensure the necessary temperature limits of the spacecraft. The workshop located in the clean room and equipped with all necessary equipment with support of AIRBUS DS.



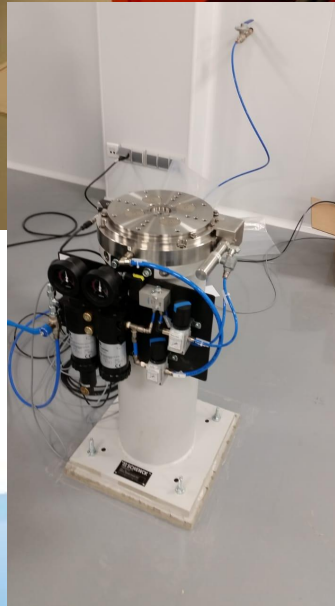
# Electronics workshop

The electronics production workshop is dedicated for the production of printed circuit boards and other electronic units for the space application.

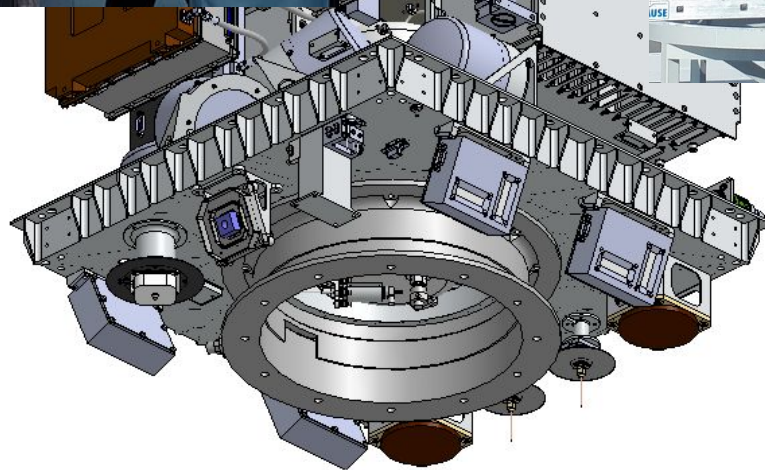
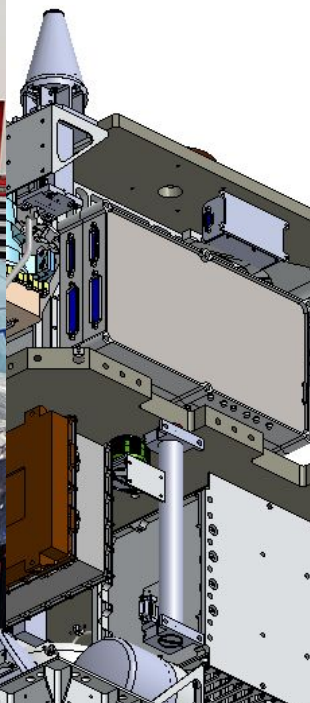




# TestLab



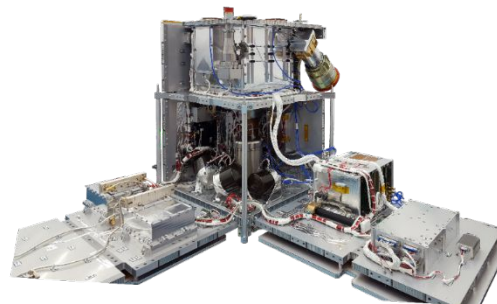
# KazSTSAT



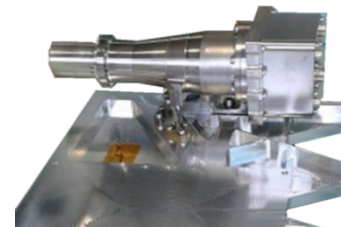


# KazSTSAT mission

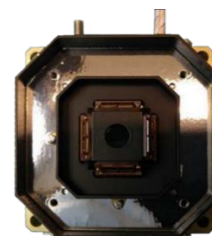
- A joint British-Kazakh KazSTSAT mission introducing a wide range of new technologies including
  - The new 100 kg class platform itself
  - First in orbit demonstration of the beyond diffraction limit imaging technology
  - OBC ARM – a versatile module to be used as an OBC, High speed payload data recorder
  - BASS Sun sensor
  - Ground Segment
- Almost everything about this mission is experimental: from a completely new platform architecture and most of the modules designed and built from scratch to a dynamic organizational structure of the team as well as approaches tried and applied



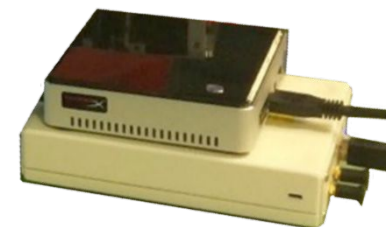
KazSTSAT platform



Beyond diffraction limit camera



Bi axial SunSensor

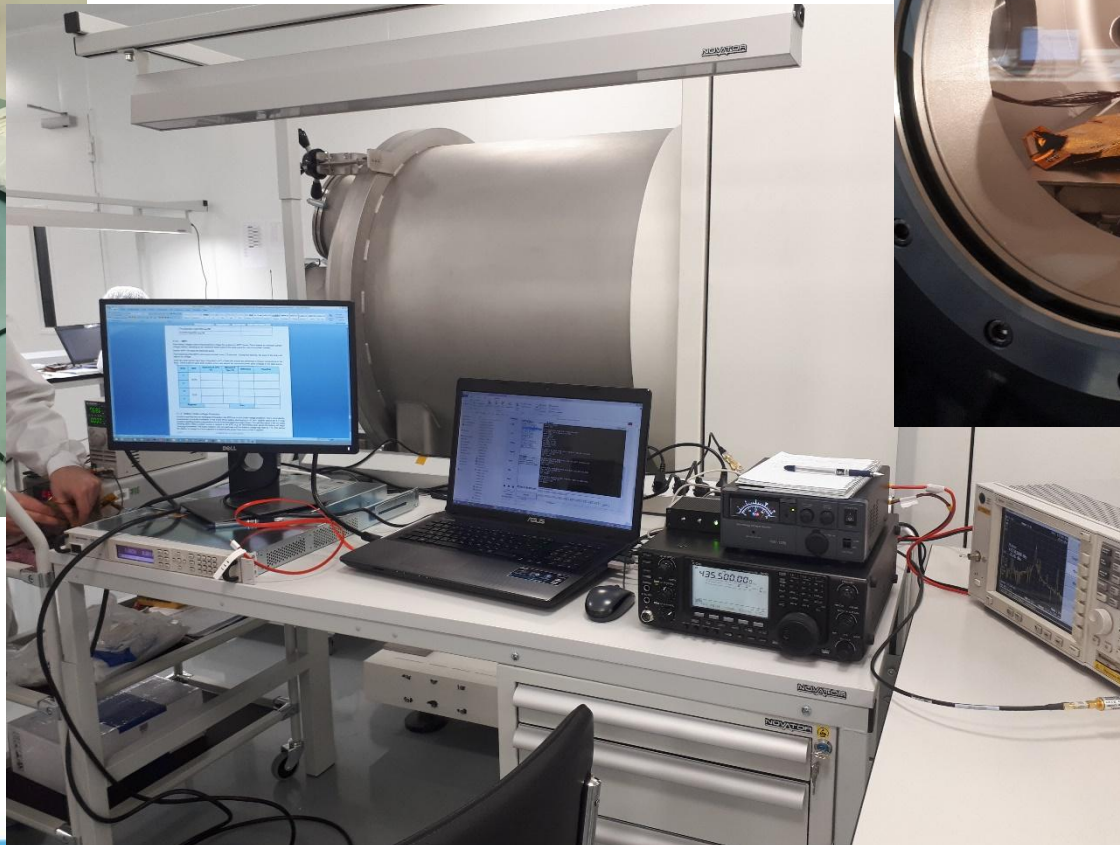


SDR based Ground Station



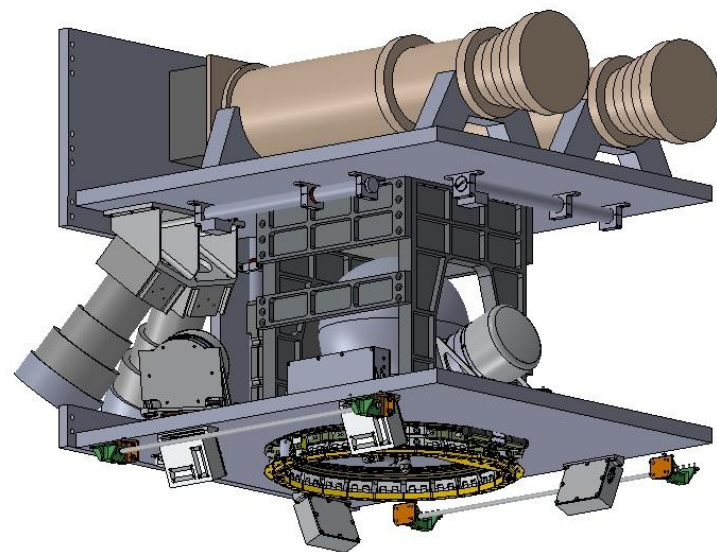
On-board computer

# Cubesat KazSciSat





# Future





# Thank You

