

# Local Chapter Activity Report

## at the Local Chapter Empowerment Meeting

### UNISEC–Kazakhstan

Nazgul Kaliyeva

Acting Associate Professor

Department of Mechanics

al-Farabi Kazakh National University

2023

# History of Local Chapter Activities

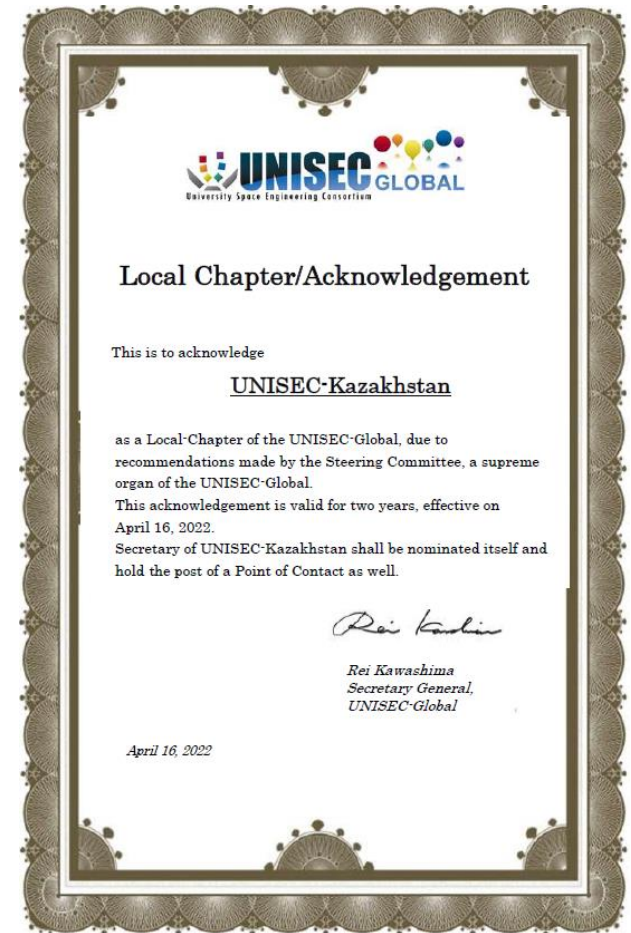
UNISEC-Kazakhstan was established in 2022.

Member universities:

- al-Farabi Kazakh National University (KazNU)
- Almaty University of Power Engineering and Telecommunications (AUES)
- L.N. Gumilyov Eurasian National University (ENU) (in process)



# AUES



# History of Local Chapter Activities

- Participated 7th Nano-Satellite Symposium & 4th UNISEC-Global Meeting 2016 (Varna, Bulgaria)



Al-Farabi Kazakh National University

The 7th Nano-Satellite Symposium

Development of a first Kazakhstan student nanosatellite Al-Farabi-1

Al-Farabi Kazakh National University  
Almaty, Kazakhstan

presenter: PhD student Nursultan Doszhan



Al-Farabi Kazakh National University

## Contents:

- Introduction – Al-Farabi-1 background information
- Mission of Al-Farabi series
- Subsystems of Al-Farabi-1
- The power supply system
- Antenna deployment system
- The communication system
- The motion simulation model of Al-farabi-1
- Thermal and mechanical analyzes of Al-farabi-1
- Conclusion
- Lessons learned
- Future plan

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# History of Local Chapter Activities

- Attended 31<sup>st</sup> ISTS & 8<sup>th</sup> Nano-Satellite Symposium 2017 (Matsuyama, Japan)



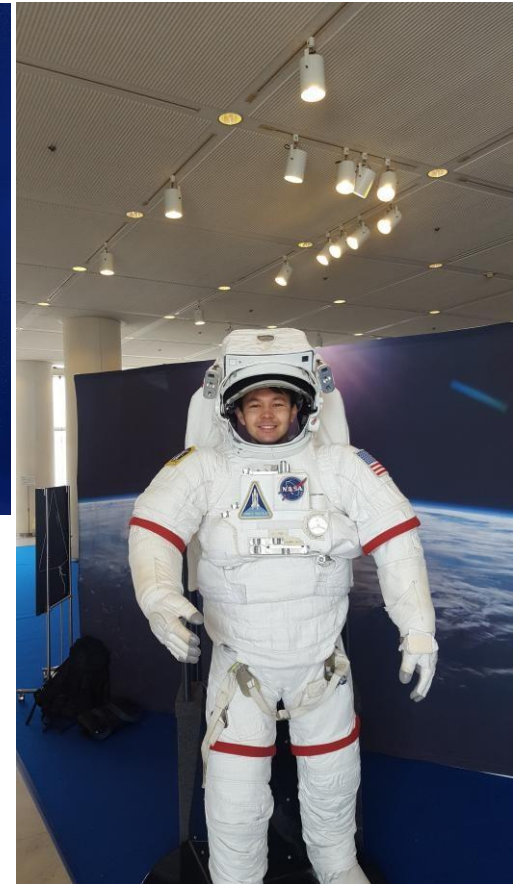
**Joint Conference : 31<sup>st</sup> ISTS , 26<sup>th</sup> ISSFD & 8<sup>th</sup> NSAT**  
 ISTS : International Symposium on Space Technology and Science 宇宙技術および科学の国際シンポジウム  
 ISSFD : International Symposium on Space Flight Dynamics 国際フライトダイナミクスシンポジウム  
 NSAT : Nano-Satellite Symposium 超小型衛星シンポジウム

**"Open up a New Age of Space Discovery"**  
 Space Cuckoo Flies to New Space Frontier from Matsuyama~  
 2017年(平成29年)6月3日(土)~6月9日(金)  
 ひめぎんホール  
 June 3-9, 2017 Matsuyama-Ehime, Japan Himegin Hall

<http://www.ists.or.jp/> ISTS事務局 〒103-0022 東京都中央区日本橋駅前4-1-21 近江ビル4F  
 Tel: +81-3-6202-5315 e-mail: istsj@ists.or.jp

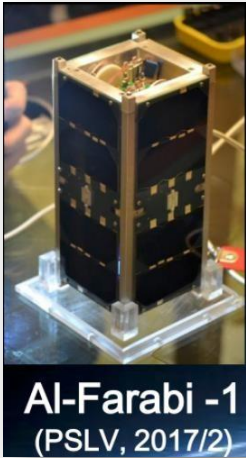
主 催 / 第31回宇宙技術および科学の国際シンポジウム組織委員会  
 一般社団法人 日本航空宇宙学会  
 共 催 / 第26回国際フライトダイナミクスシンポジウム(ISSFD)組織委員会  
 財団法人 宇宙空間シンポジウム組織委員会  
 特別協力 / 宇都宮、和山、第11回宇宙技術および科学の国際シンポジウム実行委員会  
 和山大学航空宇宙学研究所  
 後 援 / 宇都宮大学、宇都宮市宇宙情報研究推進事務局、経済産業省、国土交通省、総務省、宇宙航空研究開発機構、情報通信研究機構、日本経済団体連合会、宇宙開発利用推進委員会、日本の衛星利用(IJOU)  
 協 賛 / 日本ロケット協会、日本航空宇宙学会、電子情報通信学会、日本機械学会、計測自動制御学会、日本マイクロエレクトロニクス学会、日本宇宙航空研究開発学会、主盟大学、石川県立大学、日本航空宇宙学会、宇宙科学振興財団、アメリカ航空宇宙学会(AIAA)、日本産科科学会、地球電磁気/地球惑星科学会、宇宙上層圏科学会

© 1999-2017 JSPS 総研 JPH14P0705 の成果を基にしています。

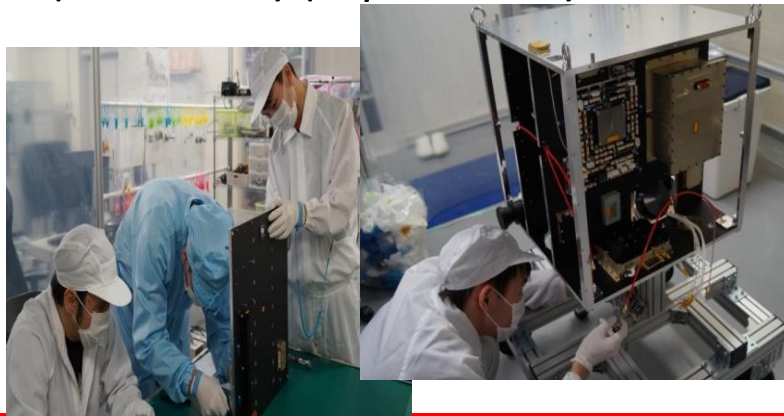


# History of Local Chapter Activities

- *Practical Space Projects (al-Farabi-1,2 cubesats)*



- *Participated in Uniform-3&4 microsatellite EM integration and test (Vibro&TV) (Japan 2015)*



# History of Local Chapter Activities

- Participated 11th Nano-Satellite Symposium & 8<sup>th</sup> UNISEC-Global Meeting 2022 (Istanbul, Turkey)



# History of Local Chapter Activities

- Participated in CLTP in 2022 (CLTP11)

**CLTP 11 was organized in Nihon University(Chiba, Japan) and AOTS (Tokyo, Japan)**

Preliminary online-Lectures: August 1-15, 2022

Date: August 18-31, 2022



# History of Local Chapter Activities

- Participated in CLTP in 2023 (CLTP12)

CLTP 12 was organized in Nihon University(Chiba, Japan) and AOTS (Tokyo, Japan)

Preliminary online-Lectures: July 17- August 20, 2023

Date: August August 21 - September 1, 2023





# UNISEC-Global Activities in 2022-23

\*\*Number of

- Member Universities: 2
- Students: 40
- Professors: 15
- Others (Corporative members, etc.): 8

- *Organized international student competition  
Kazakhstan Smart Space March, 2022*



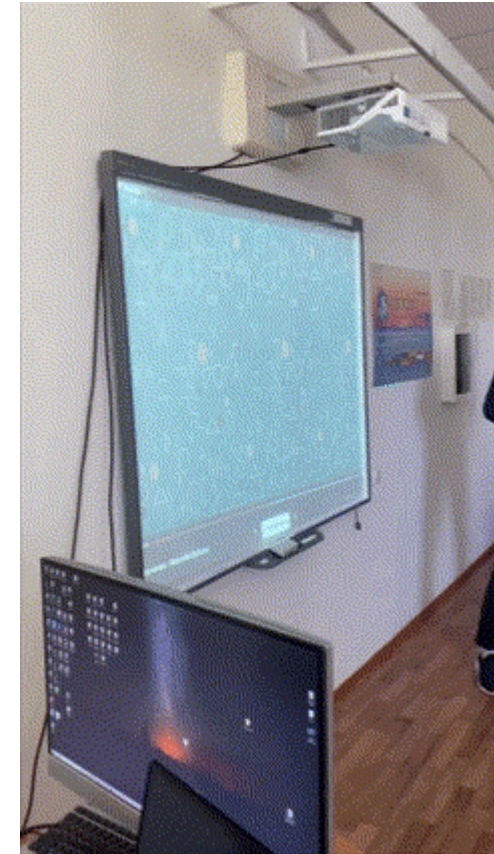
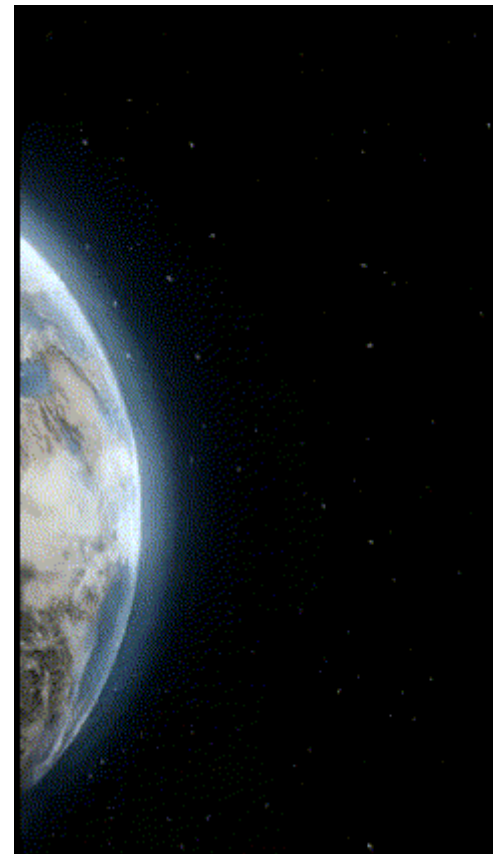
# UNISEC-Global Activities in 2022-23

- *Organized / International Forum "AUES INTERNATIONAL AEROSPACE COMPETITION (AIAC)" April, 2023*



# UNISEC-Global Activities in 2022-23

*-Organized Space QUIZ competition among 1-4 year bachelor students of KazNU , April 2023*



# UNISEC-Global Activities in 2022-23

Kazakhstan

-UNISEC Student Organization -  
Global  
New Student representative



**Bexultan Zhengis**  
Kazakh National University  
(KazNU Al-Farabi)

# UNISEC-Global Activities in 2022-23

## - *Participated in Space Open days in Kazakhstan*

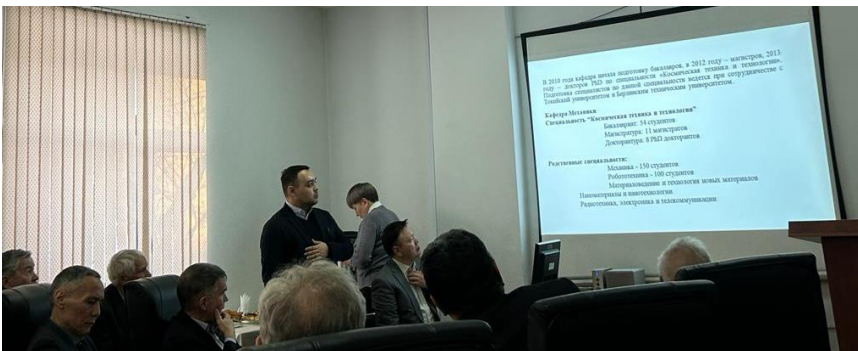
Took part in an open day organized by the space company Ghalam LLP at the National Space Center. Ways of further cooperation were discussed.



# UNISEC-Global Activities in 2022-23

*- Participated in Seminar-Meeting of JSC “National Center of Space research and Technology”, December, 2023*

Took part in a seminar-meeting on the creation of a scientific and educational consortium and space technology cluster "Almaty".



# UNISEC-Global Activities in 2022-23

- *Attended in rocket launch in Baikonur launch area, 2022*

Students participated in monitoring the launch of the launch vehicle "Soyuz-2.1a" with the spacecraft "Soyuz MS-22".



# UNISEC-Global Activities in 2022-23

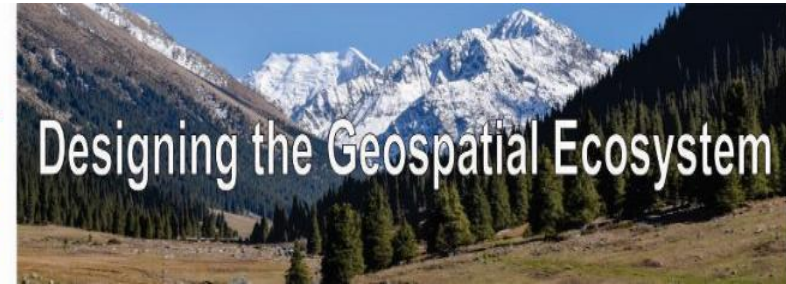
- *Attended in rocket launch in Baikonur launch area, March 2023*

Students participated in monitoring the launch of the Proton-M launch vehicle with the Luch-5 relay spacecraft.





# UNISEC-Global Activities in 2022-23

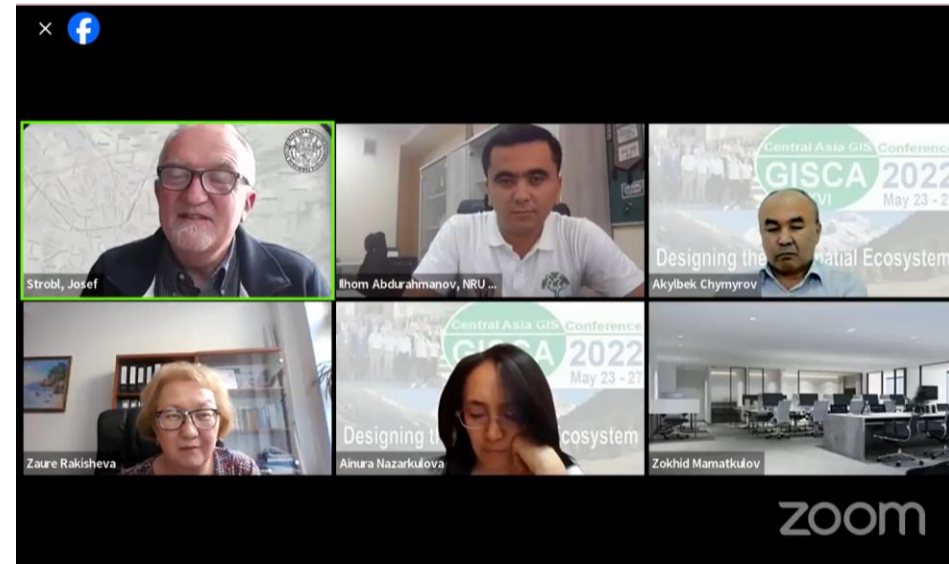


**GISCA 2022**

**The impact of TEMPUS and ERASMUS+ projects on the development of educational programs in Space Engineering and Technology at al-Farabi KazNU**

**Zaure Rakisheva**  
Head of Department on Mechanics

**MAY 23-27, 2022**



# UNISEC-Global Activities in 2022-23



ӨЛ-ФАРАБИ АТЫНДАҒЫ ҚАЗАҚ ҰЛТТЫҚ УНИВЕРСИТЕТІ  
КАЗАХСКИЙ НАЦИОНАЛЬНЫЙ УНИВЕРСИТЕТ ИМЕНИ АЛЬ-ФАРАБИ  
AL-FARABI KAZAKH NATIONAL UNIVERSITY

МЕХАНИКА-МАТЕМАТИКА ФАКУЛЬТЕТІ  
МЕХАНИКО-МАТЕМАТИЧЕСКИЙ ФАКУЛЬТЕТ  
FACULTY OF MECHANICS AND MATHEMATICS

Студенттер мен жас ғалымдардың  
**«ФАРАБИ ӘЛЕМІ»**  
атты халықаралық ғылыми конференциясы

Международная конференция студентов и молодых ученых  
**«ФАРАБИ ӘЛЕМІ»**

International Scientific Conference of Students and Young Scientists  
**«FARABI ALEMI»**

06-08.04.2023

**ҒАРЫШТЫҚ ТЕХНИКА ЖӘНЕ  
ТЕХНОЛОГИЯЛАР**

**КОСМИЧЕСКАЯ ТЕХНИКА И  
ТЕХНОЛОГИИ**

**SPACE ENGINEERING AND  
TECHNOLOGIES**

# UNISEC-Global Activities in 2022-23

- Participated in IAC 2023, Baku



# UNISEC-Global Activities in 2022-23

- *Participated in Virtual UNISEC-Global Meeting*



**Host: UNISEC-Global**  
**Time: 22:00 - 24:00 (JST)**  
**July 16, 2022**

## 23rd Virtual UNISEC-Global Meeting

Moderator: **Nate Taylor**, UNISEC-Global



**OPENING REMARKS** **George Maeda**, UNISEC-Global

**PRESENTATIONS**

**Satoru Kurosu**, Yokogawa Electric Corporation  
Topic: Space and SDGs

**Shinichi Nakasuka**, The University of Tokyo  
Topic: Introduction to PreMIC8 Workshop - Constellation and Formation Flying Mission Design

**REGIONAL REPORTS**

**Zaure Rakisheva**  
Al-Farabi Kazakh National University, UNISEC-Kazakhstan

**Timothy Kuhamba**,  
Kyushu Institute of Technology, Zimbabwe

**Gorki Ernesto Encarnación Morrobel**  
The APEC University (UNAPEC), Dominican Republic

**Giovanna Ramirez**  
UNISEC-Colombia

**ANNOUNCEMENT & CLOSING**

**Rei Kawashima**, UNISEC-Global  
and those who have announcements



Theme:  
Space  
and  
SDGs

[HTTP://WWW.UNISEC-GLOBAL.ORG/VIRTUAL-MEETING.HTML](http://www.unisec-global.org/virtual-meeting.html)

# UNISEC-Global Activities in 2022-23

- Participated in Virtual UNISEC-Global Meeting



## 25TH VIRTUAL UNISEC-GLOBAL MEETING

Host: UNISEC-Global  
 Time: 22:00-24:00 (JST)  
 September 17, 2022

**MODERATOR** | Nate Taylor  
UNISEC-Global

**PRESENTATIONS** | Mr. George Maeda  
UNISEC-Global  
Topic: Tokyo International Conference on African Development(TICAD 8)-UNISEC report

**AWARDING** | Dr. Samer Lahouar  
UNISEC-Tunisia, HE National Contact Point-Space  
Topic: Tunisia Space Essay Competition Awarding

**REGIONAL REPORT** | Dr. Yeshurun Alemayehu Adde (Kibret)  
Point of Contact-UNISEC-Ethiopia,  
Deputy Director General-Ethiopian Space Science & Technology Institute  
Topic: Space Activities-Ethiopia

**CANSAT LEADER TRAINING PROGRAM (CLTP 11) BRIEFING SESSION WITH CLTP 11 GRADUATES**

**ANNOUNCEMENTS & CLOSING** | Rei Kawashima  
UNISEC-Global  
and those who have announcements



Theme: Impacting space through capacity building activities"




[HTTP://WWW.UNISEC-GLOBAL.ORG/VIRTUAL-MEETING.HTML](http://www.unisec-global.org/virtual-meeting.html)

# UNISEC-Global Activities in 2022-23

- Participated in Virtual UNISEC-Global Meeting



**UNISEC GLOBAL**  
University Space Engineering Consortium

## 39th Virtual UNISEC-Global Meeting

**The 8th Mission Idea Contest Semi-Finalist Presentation**

**Sargassum One: A 3U CubeSat Constellation Mission for Sargassum Monitoring**

Marian Duval and Darien Rosario,  
Universidad Acción Pro-Educación y Cultura, Dominican Republic

**PARIDHI – 6U Nanosatellite constellation mission for observation and study of the Van Allen Belt**

Ashish Shinde,  
Indian Institute of Space Science and Technology

**MIC8 Reviewers**

Maximilien Berthet, the University of Tokyo  
Richard Long, MIC1 finalist

**CLTP12 Briefing**



**Ramson Mulyaradzi Nyamukondiwa**  
Kyushu Institute of Technology



**Nazgul Kaliyeva**  
Al-Farabi Kazakh National University



**Nagisa Sone**  
Nihon University  
HEPTA-Sat Training Teaching Assistant

**Opening Remark**



**Paolo Marzioli**  
Sapienza University of Rome

**Restart of UNISON-Global**



**Honoka Shibata**  
UNISEC Student Intern



**Moderator**

**George Maeda,**  
ArkEdge Space

**UNISEC-Global Activities 2023**  
~CLTP12, MIC8 and UNISON-Global~

Host: UNISEC-Global  
Time: 22:00-24:00(JST)  
December 16, 2023

**Register now!**

<http://www.unisec-global.org/virtual-meeting.html>



# UNISEC-Global Activities in 2022-23

## - *On-going Space Projects*

Development of a control system for configuration keeping of the spacecraft formation with taking into account the uncertainties. (*Supervisor – Prof. Z.Rakisheva, Foreign consultant – Prof. Sh.Nakasuka, The University of Tokyo, Japan*)

Study of the wave climate of the water bodies of Kazakhstan using the satellite altimetry data (*Supervisor – Prof. Z.Rakisheva, Foreign consultant – Prof. T.Soomere, Tallin University of Technology, Estonia*)

New Courses in Geospatial Engineering for Climate Change Adaptation of Coastal Ecosystems» (GEOCLIC) (Erasmus+) (*Coordinator – KazNU (Kazakhstan), Partners – Netherlands, Germany, Azerbaijan, Latvia, Romania, Turkmenistan*)

Development of nanosatellite orientation control system with flywheels as actuators based on linearization methods (*Supervisor – PhD, K. Alipbayev*)

Design and development of narrow-beam satellite-to-satellite antenna systems with the best and optimal characteristics for Cubesat form factor (*Supervisor – PhD, K. Alipbayev*)

# Plan for 2024 and beyond

- Support 3<sup>rd</sup> International Competition «Kazakhstan Smart Space» (April, 2024)
- International Conference of young scientists (April, 2023)
- CanSat competition between the domestic universities (2024)



# Thank you for your attention!

Nazgul Kaliyeva

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al-Farabi Kazakh National University

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Facebook: Unisec Kazakhstan