



TUSA

Turkish Satellite Based Navigation Program

ICG - 17
Madrid, Spain

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Space
Agency

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of Turkiye



Sole representation of Republic of Turkiye in all space related regional and international organisations



Granting permissions for the domestic launch, deployment to the orbit, re-entry operations and coordinating such activities



Determining procedures and principles related to the export of critical aerospace technology



Carrying out regulation functions and other relevant works related to space law



Preparing **National Space Program**



Preparing **Strategic Plans**



Making **plans** or **projects** or make it done



Supporting and coordinating **scientific space exploration activities**



Performing **project development, planning** and other works for the **design, manufacturing, integration** and **test** of all kinds of **aerospace products, technologies, facilities and instruments** according to prepared strategic plans



Developing aerospace **products, technologies and infrastructure** and making decisions on the **infrastructure and facility establishment**



Having/coordinating operations performed thereof the **commercial, scientific** space operations, space operations with the **research and development** purpose, **manned or unmanned space access and exploration** operations



Making/having studies on the **development of a competitive aerospace industry**, broadening the use of the aerospace technologies

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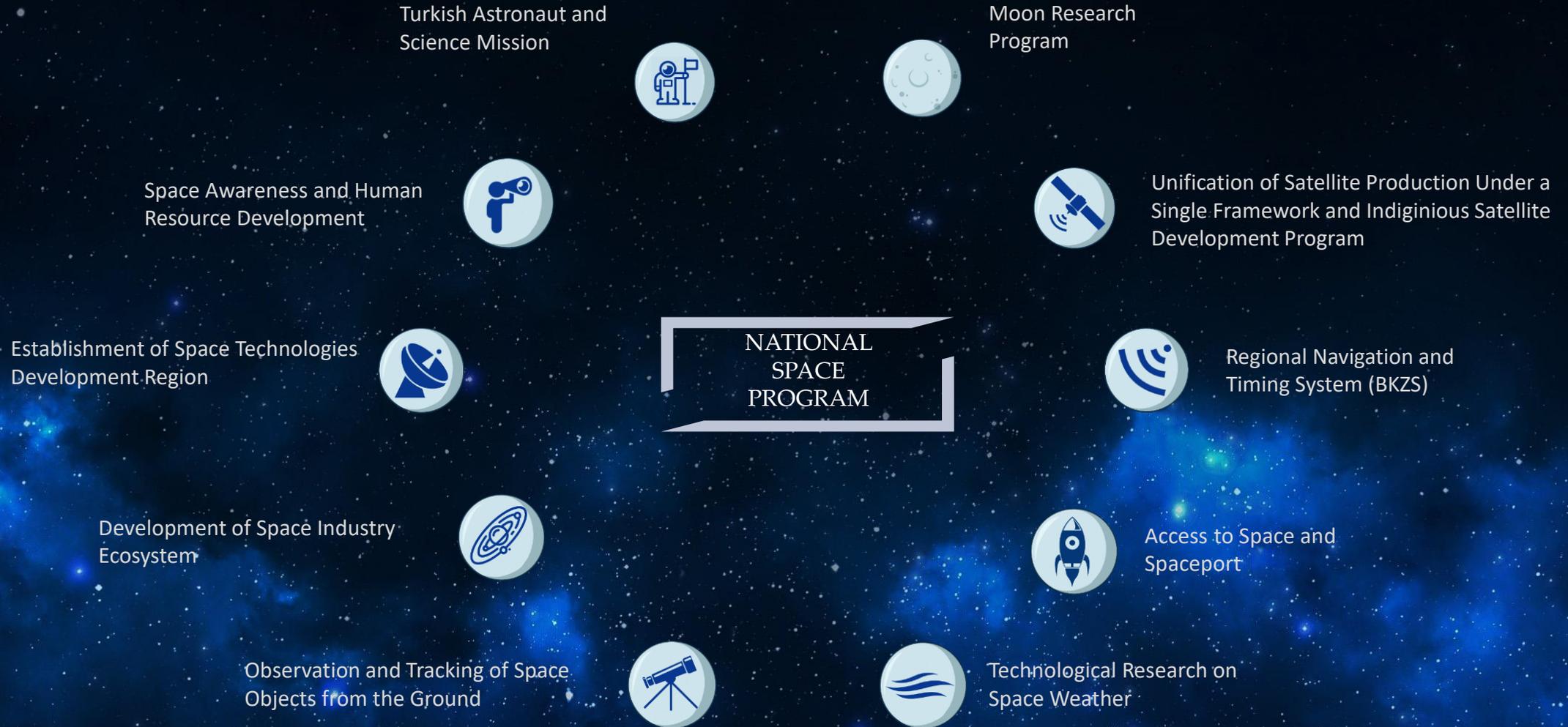
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2 National Space Program of Turkiye

10 Main Goals



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➤ **Actively Used GNSS Services in Turkiye**

❖ GPS, GLONASS, Galileo, BeiDou

➤ **Continuously Operating Reference Stations Network (CORS-TR)**

❖ 168 Stations

❖ Supports GPS and GLONASS

❖ RTK, DGPS and Rinex services

❖ Operated by

- General Directorate of Land Registry and Cadastre
- General Directorate of Mapping



3 Turkish Satellite Based Navigation Program

Current Situation in Turkiye

➤ Satellite Based Augmentation

❖ EGNOS

- One RIMS in Ankara
- Covers West of Turkiye

➤ International GNSS Service Network (IGS)

❖ 6 Stations in Turkiye (1 inactive)

- GPS (6 Stations)
- Galileo (4 Stations)
- QZSS (1 Station)

GLONASS (5 Stations)

BeiDou (4 Stations)

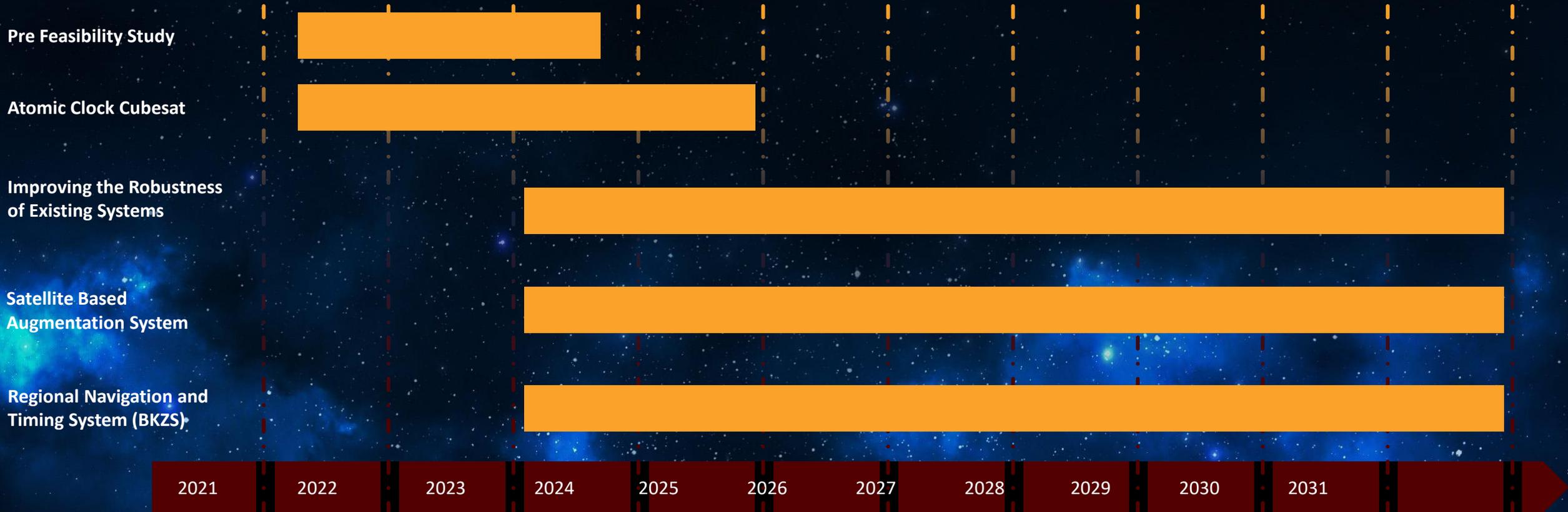
SBAS (4 Stations)



1. 10 Main Goals of National Space Program was announced in 2021.
2. One of the main goals of the National Space Program is «Regional Navigation and Timing System (BKZS)»
3. National Space Program Strategy Document was published in 2022.
4. TUA has established a working group with its domestic partners to coordinate the studies on BKZS.



Regional Navigation and Timing System Goal



1. Making a pre-feasibility study
2. Developing a space qualified atomic clock and testing in orbit.
3. Upgrade and Integration of existing positioning infrastructures (such as CORS-TR).
4. Establishment of an SBAS (Satellite Based Augmentation System) which will also support forthcoming Turkish Regional Positioning System.
5. Establishment of a regional positioning and timing system with independent operational capability.



➤ **Goals of the Project**

- ❖ Development of Rubidium Atomic Frequency Standard (RAFS) for a CubeSat
- ❖ Integration of the atomic clock to a 6U CubeSat
- ❖ Testing the atomic clock in orbit (LEO)



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➤ **TUA Perspective**

- ❖ Aims to enhance international cooperation, coordination and information exchange on GNSS.
- ❖ Participating the ICG events as an invited observer.
- ❖ Applied for ICG membership of Turkiye.



4 ICG Membership of Turkiye

After Approval of Membership

➤ TUA plans to

- ❖ Invite Turkish partners to the ICG and its sub-group meetings.
- ❖ Encourage Turkish experts to participate and contribute to the ICG sub-groups.
- ❖ Promote cooperation and coordination with ICG member states.





Thank You

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Emre ICEN
Space Technologies Expert
Head of Space Based Navigation Unit
emre.icen@tua.gov.tr