The 1st UNISEC-GLOBAL MEETING
23-24 November, 2013, Tokyo, Japan

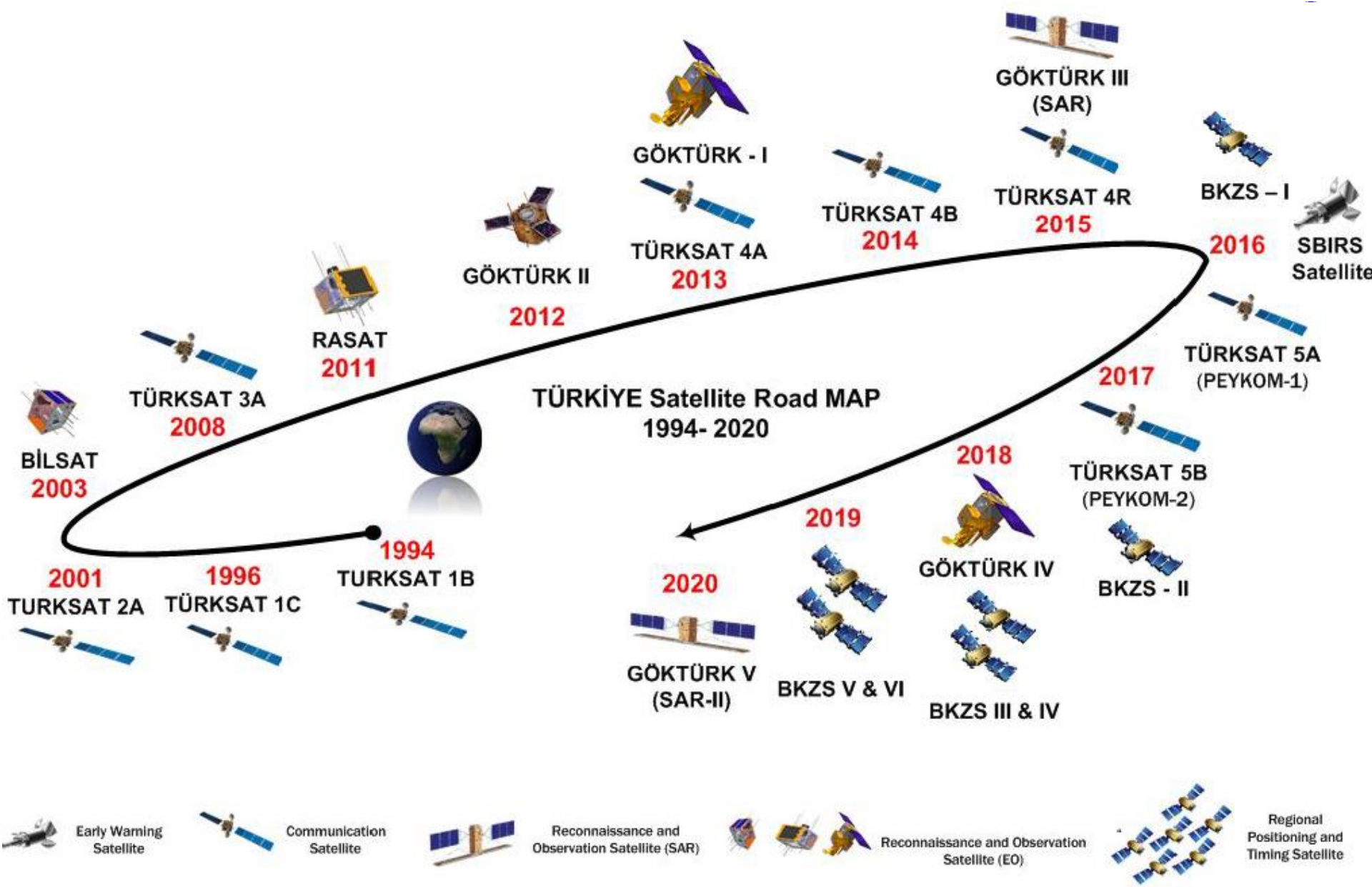
UNISEC-TURKEY

Prof.Dr. Alim Rüstem Aslan

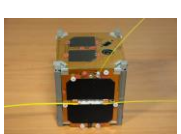
Space Systems design and Testing Lab, Dept. of Space Engineering
Istanbul Technical University, aslanr@itu.edu.tr, http://usl.itu.edu.tr

MOTIVATION

- National Space Program
- Towards Turkish Space Agency
- New Space Engineering Departments
- Increase Space awarness
- Support space related education with practical projects
- Support new establishments through cooperation and collaboration (international)
- Receive adequate funding for large multi university space projects



ITUpSAT1(2009) 3USAT(2013) BeEagleSat(2015)



History: USTE-UTEB

- Talks with UoT and UNISEC, Oct 2010
- initial agreement of 3 Istanbul universities (ITU, TurAFA, YTU) for the first UNISEC like activity in Turkey:
  - Union of Space Technology Education (USTE) (UTEB in Turkish), in late 2011.
- aimed to create a strong collaboration of different universities to spread and improve space technology and education activities, in Turkey.

UNISEC-TR

- Invitation to universities with space related work (aerospace, astronomy and space sciences, mechatronics, ...)

1st UTEB Meeting

- November 2, 2011 in Istanbul Technical University
- Over 20 universities participated
- Presentations on capacity and capability
- Agreement on forming UTEB,
- Start as a non binding unofficial union
- Outcome: within UNISEC-TR existing resources may be shared and developed further efficiently.

UTEB

- With the consensus of the participant universities, the UTEB meetings resulted in the following findings and decisions:
  - Many universities has facilities and capabilities that may be jointly used for space project
  - The **space education could be spread** widely to other universities, high schools and colleges via short **courses** to be given with experienced ones.
  - National CanSat and Rocketry **Competitions, symposium and seminars** should be organized.
  - Joint space research and development **projects** should be initiated.

UTEB

- The **capabilities and laboratory infrastructures** of the all the participant universities should be open to collaboration.
- Graduate level space **summer schools**
- The interest of the UTEB should include **space sciences, spacecraft and launch systems**.
- UTEB web page and communication list
- Study areas and research sub-groups

UTEB CAPABILITIES

- Major capabilities of the participant universities:
  - Afyon Kocatepe University:
    - Structural design and analysis of space structures,
    - Deployable composite antenna which can also be used to de-orbit the satellite.
  - Anatolian University:
    - Satellite and space sciences research institute is widely involved in the remote sensing and geographical information systems.
    - Certain departments can educate technicians who may work on space projects.
  - Ankara University:
    - High resolution telescopes that can be used to observe satellites from ground.

UTEB CAPABILITIES

- Atılım University:
  - Space mechatronics and space propulsion.
- Bilkent University:
  - Space communication and power system,
  - Vibration reduction systems,
  - Space qualified manufacturing,
  - Clean room capabilities.
- Bosphorus University:
  - Space propulsion,
  - Software development,
- Erciyes University:
  - Radio astronomy, 13 m radio antenna.

UTEB CAPABILITIES

- Koç University:
  - Scientific experiments for space,
  - Software and laboratory support.
- Özyeğin University:
  - Cloud computing, data streaming and real time data handling.
- Sabancı University:
  - Payload design and development.
  - Sensor develpments; X-ray detectors.
- Sakarya University:
  - Space structure coating.

First Cooperation

- BeEagleSat project by Istanbul Technical University, Turkish Airforce Academy and Sabancı University
- Various students are working on the project and gaining hands-on experience

One of UTEB's main goal

- to seek government/industry support
  - in order to start new nano and/or micro sized student satellite projects,
  - join international projects, e.g. the UNIFORM of Japan (continuing negotiations).

Support Programs

- National Funds
  - TÜBİTAK programs
  - UDHB/HUTGM
  - TÜRKSAT
  - SSM
  - Ministry of Development and Industry
  - Technopolis

- International Funds

Involvment in UNISEC Activities

- Yearly UNISEC meetings in JAPAN during NANOSAT symposiums
- efforts for UNISEC GLOBAL

- Participation in
  - CLTP1, 2 and 3 (ITU and TurAF total of 5)

  - MIC1 and MIC2 (total of 17 proposals)
  - involve AMSAT-TR (TAMSAT) in MIC1
  - İnvolve other universities in MIC2

CLTP2

November 14 - December 14, 2011

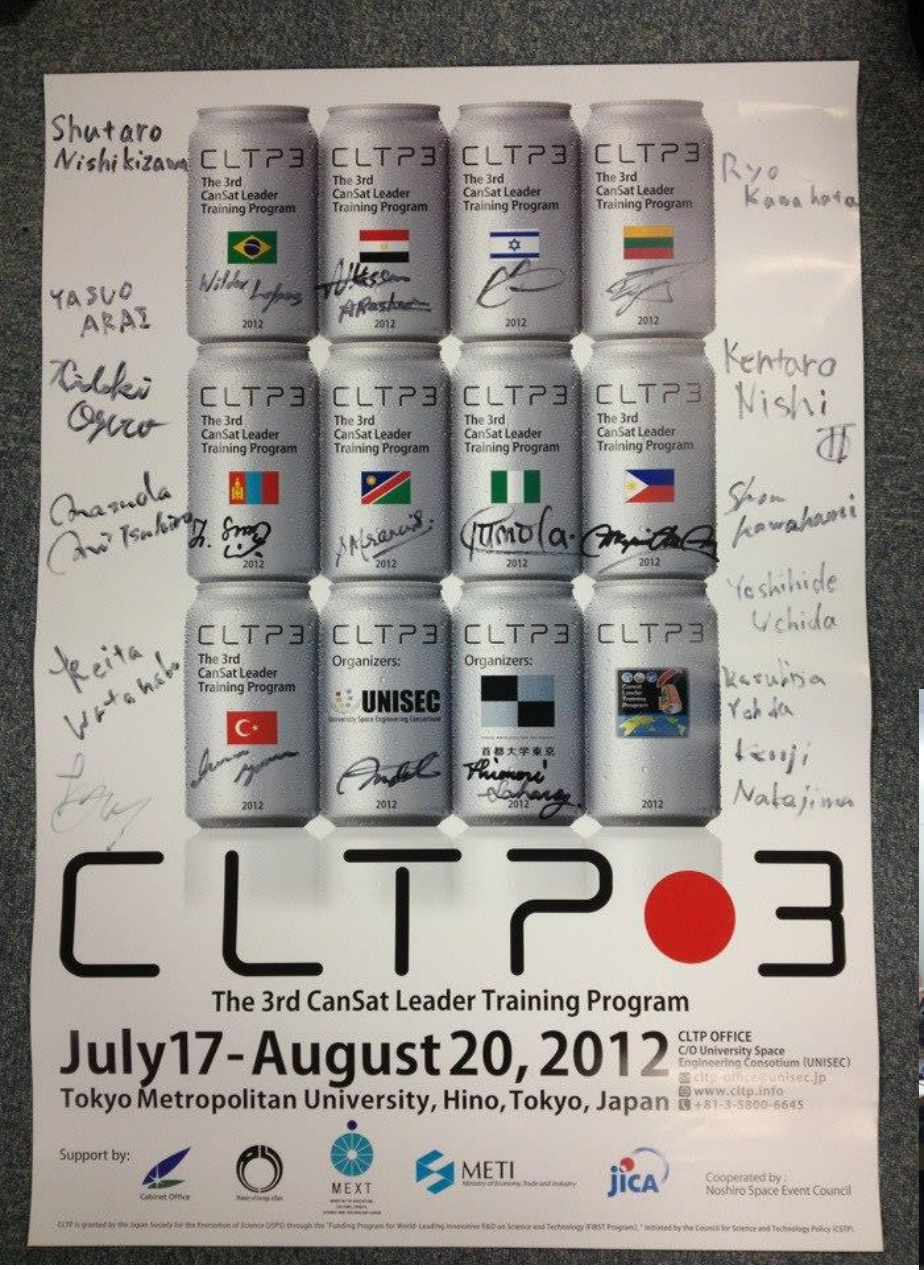
CanSat Leader Training Program

UNISEC
University Space Engineering Consortium

日本大学

Supported by:
Cabinet Office, Government of Japan Ministry of Foreign Affairs of Japan
Ministry of Education, Culture, Sports, Science and Tehcnology, Japan
Ministry of Economy, Trade and Industry of Japan Japan International Cooperation Agency

This program is granted by the Japan Society for the Promotion of Science (JSPS) through the "Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST Program)," initiated by the Council for Science and Technology Policy (CSTP).


Shutaro Nishikizawa
Ryo Kawahara
YASUO ARAI
Kentaro Nishi
Shun Kawahara
Yoshihide Uchida
Kazuhisa Yahata
Tenji Nakajima
CLTP3
The 3rd CanSat Leader Training Program
2012
Organizers:
UNISEC
CLTP•3
The 3rd CanSat Leader Training Program
July17-August20, 2012
Tokyo Metropolitan University, Hino, Tokyo, Japan
CLTP OFFICE
C/O University Space Engineering Consotium (UNISEC)
www.cltp.info
+81-3-5800-6645
Support by:
Cabinet Office
MEXT
METI
JICA
Cooperated by :
Noshiro Space Event Council


DOCUMENTS, CLTP3 IN TMU

2012 NASA AIAA AAS
TEXAS CANSAT COMPETITION
FIRST PLACE

2nd UTEB Meeting

- June 2013 as a part of RAST conference in Istanbul
- 14 University, 3 government, 2 Industry
  - Start with a CanSat course, look for support
  - A joint satellite project considering national roadmap
  - UNISEC GLOBAL

3rd UTEB MEETING

- September 12, 2013, in Ankara, during AIAC2013. Decision taken:
  - A 2-3 week course on CanSat development, as similar to CLTP, shall be held in Istanbul with the support of government bodies.
  - The participants will be encouraged to take place in the Turkish CanSat competition to be organized following the CanSat school.
  - CubeSat development course to follow
  - UISEC GLOBAL may be beneficial

4th UTEB MEETING

- December, 6, 2013 at TUBITAK Space Research Institute, Ankara
- Main topics of the Agenda:
  - Presentation by TÜBİTAK Space Research Institute
  - Space related activities by UTEB participants (QB50)
  - Information on 1st UNISEC-Global Meeting (UoT)
  - Information on HORIZON 2020
  - Information on UNIFORM
  - Status of University level space related competitions,
  - Details of CANSAT course

WHY UNISEC GLOBAL?

Aerospace Projects

- Multinational
- Multidisciplinary (aerospace, mecahnical,electric-electronics, chemistry, geomatics, ...)
- Innovative materials (light, strong, heat resistant, ...)
- Strategic sectors (transportation, energy, defence,....)
- High added value
- High quality-high return

Next Century

- Space Fussion Plants established
- Electricity from space to earth
- Minining from moon and asteroids
- Colonies, Industrial centers at LEO

- Main goal: To be a civilization living in the Solar System

New Space Technologies

- Suatainable and innovative technologies with high TRL

- Development of more capable, reliable and affordable space vehicles and launch systems

EVERY NATION MUST BE PART OF IT

UNISEC-GLOBAL

- Modern **Space engineering education** requires hands on training facilities ⇨ **expensive**.
- Space projects are **highly multidisciplinary** requiring contributions of various engineering disciplines;
  - **aerospace,**
  - **electrical & electronics,**
  - **computer science,**
  - **mechanical engineering's**.
- **pooling and sharing of available facilities and infrastructure** for both proposing and undertaking of space projects at academic level
- Help **fund** rising from government and industry for space related research projects and education.

Global UNISEC

- Define a project that involves many universities from different countries with different experiences and means
- Document project well, relate to countries needs
- Seek for direct national funding
- Exchange knowledge, experience, people
- involve non academic Space Institutions
- Current similar projects are few and supported by common international budgets

UG

- Help learn existing technologies well, to develop new ones
- ***Affordable and sustainable knowledge and technology development: joint efforts of academics, R&D centres, industry and government***
- Continuous funding with successive projects
- Academic centres: develop most of the basic and risky information
- Develop and sustain local high tech work force

Space related work force

- ABD, Russia ~ 250 000
- China ~ 50 000
- Europe ~ 35 000
- Japan ~ 7000
- Italy ~ 5000

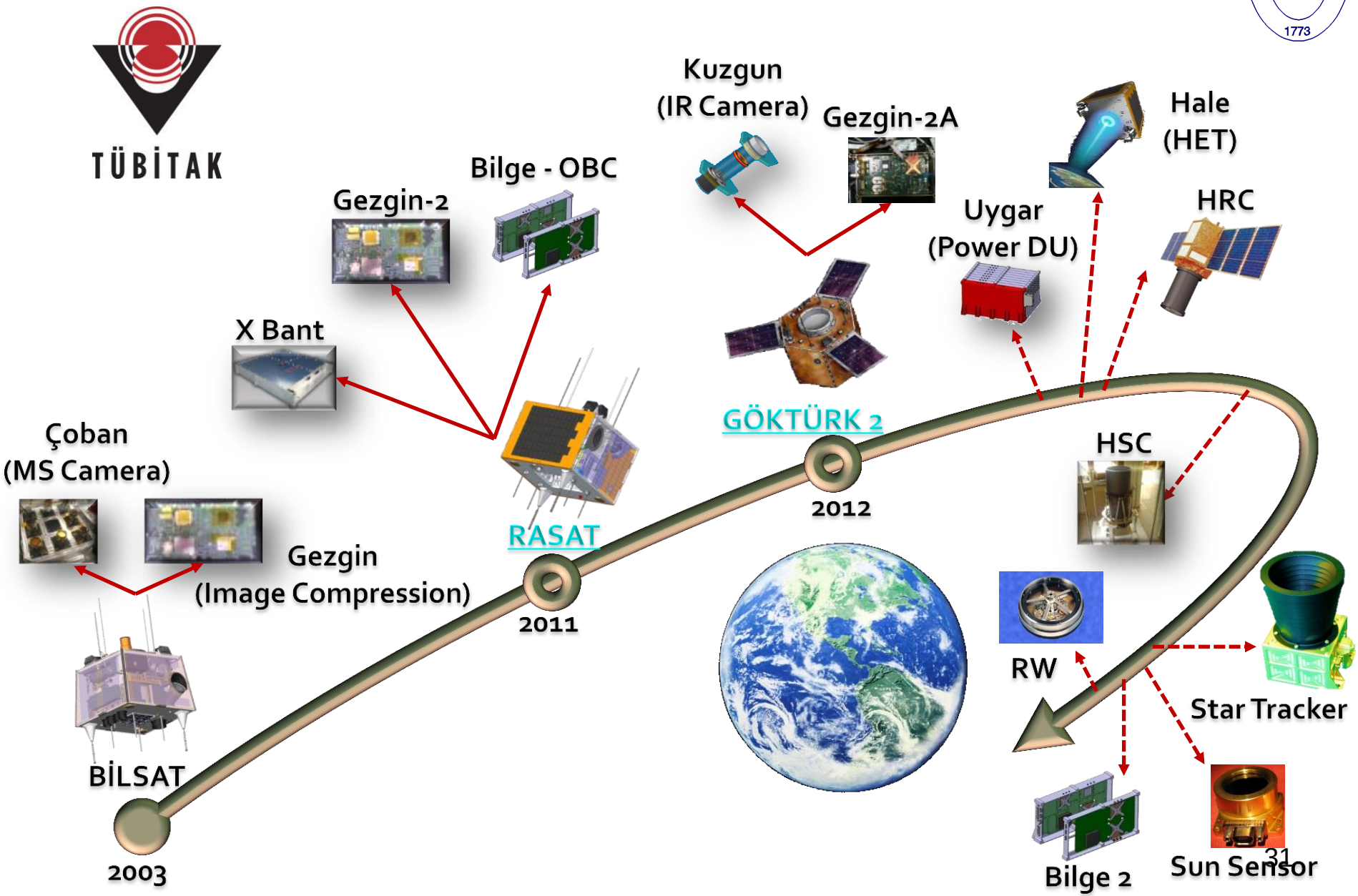
- Türkiye ~ 500

4th UTEB HOST
TUBITAK UZAY - Space Technologies Research Institute

- Satellite Technologies
  - Design, Development, Integration and Test
  - Operations
  - Image Processing and Data Production
- Communication Systems
- Data Processing

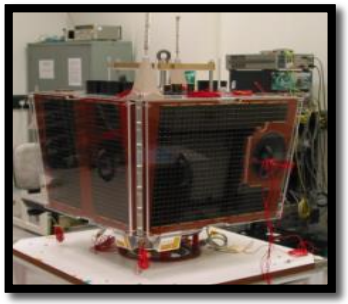
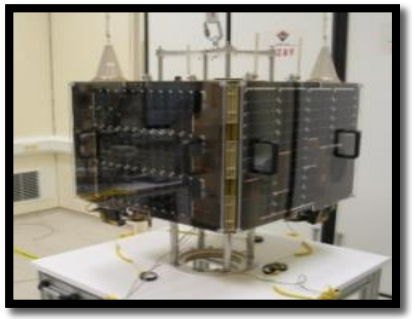
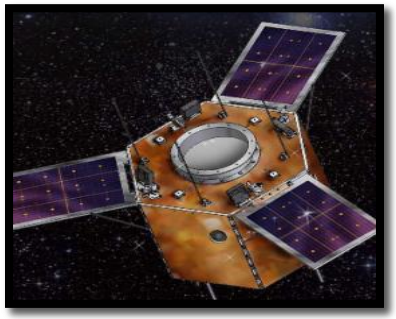
TÜBİTAK

TUBITAK UZAY - Space Technologies Research Institute



TÜBİTAK

Specifications

	BiLSAT	RASAT	GÖKTÜRK-2
			
Scope	Technology Transfer	Technology Application	Customer Oriented
Orbital Altitude	686km	687km	686 km
Resolution	12m PAN 26.7m MS	7,5m PAN 15m MS	2,5m PAN 5m MS
Launch Mass	129 kg	93 kg	393 kg
Launch Date	September-2003	17 August 2011	18 December 2012
Feature	First remote sensing and EO satellite	First national EO satellite	First national high resolution EO satellite (in coop with TAI)

Thank You…

Alim Rüstem ASLAN
Istanbul Technical University
Department of Space Engineering
+90532 480 3449
aslanr@itu.edu.tr
usl.itu.edu.tr