

Introduction to Global Contest for Nano-satellite Constellation Mission Ideas

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Announcement



We are pleased to announce the great opportunity for aerospace engineers, college students, consultants, and anybody interested in innovative space development from all over the world to participate in this unprecedented contest.

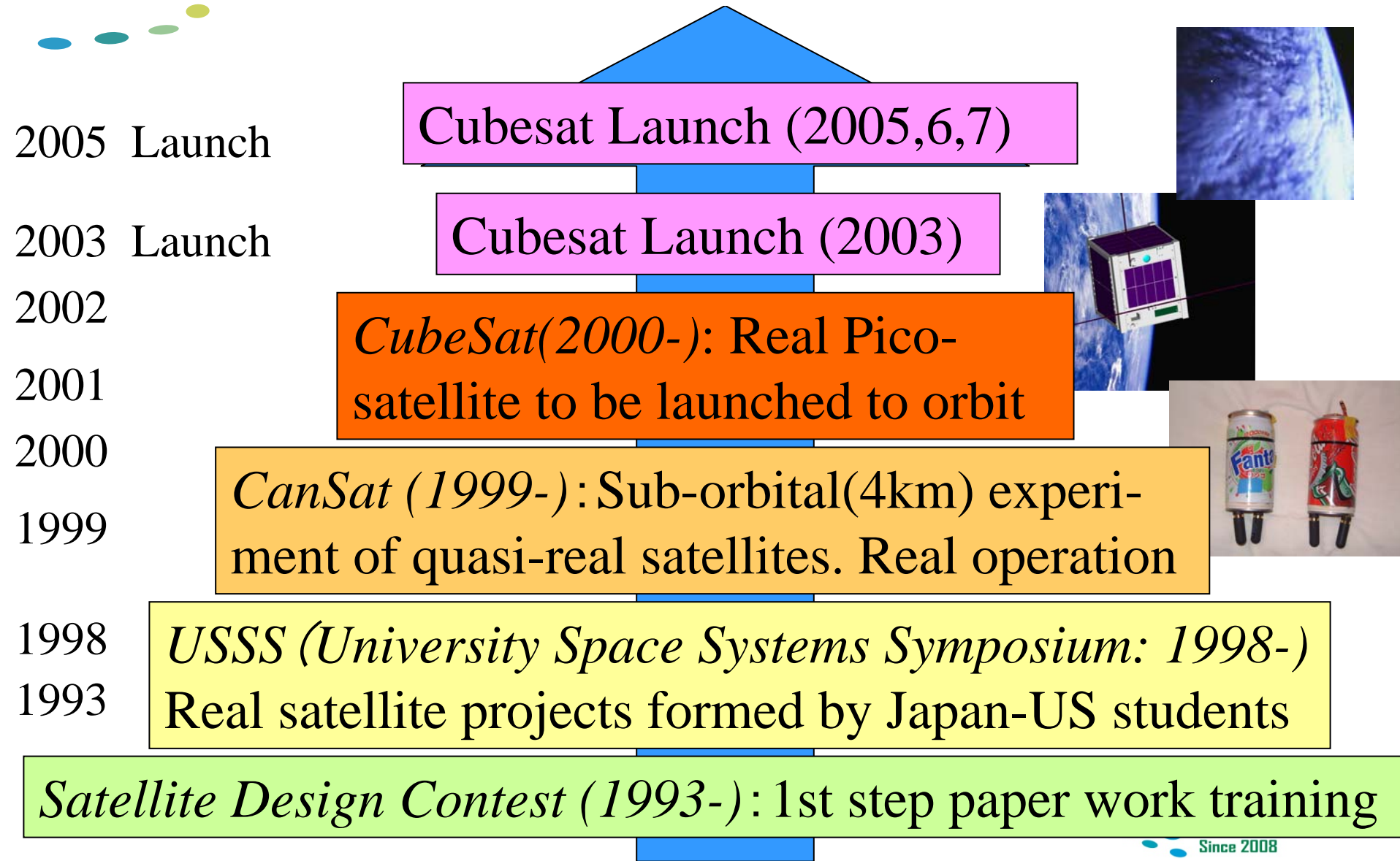


Background (1)

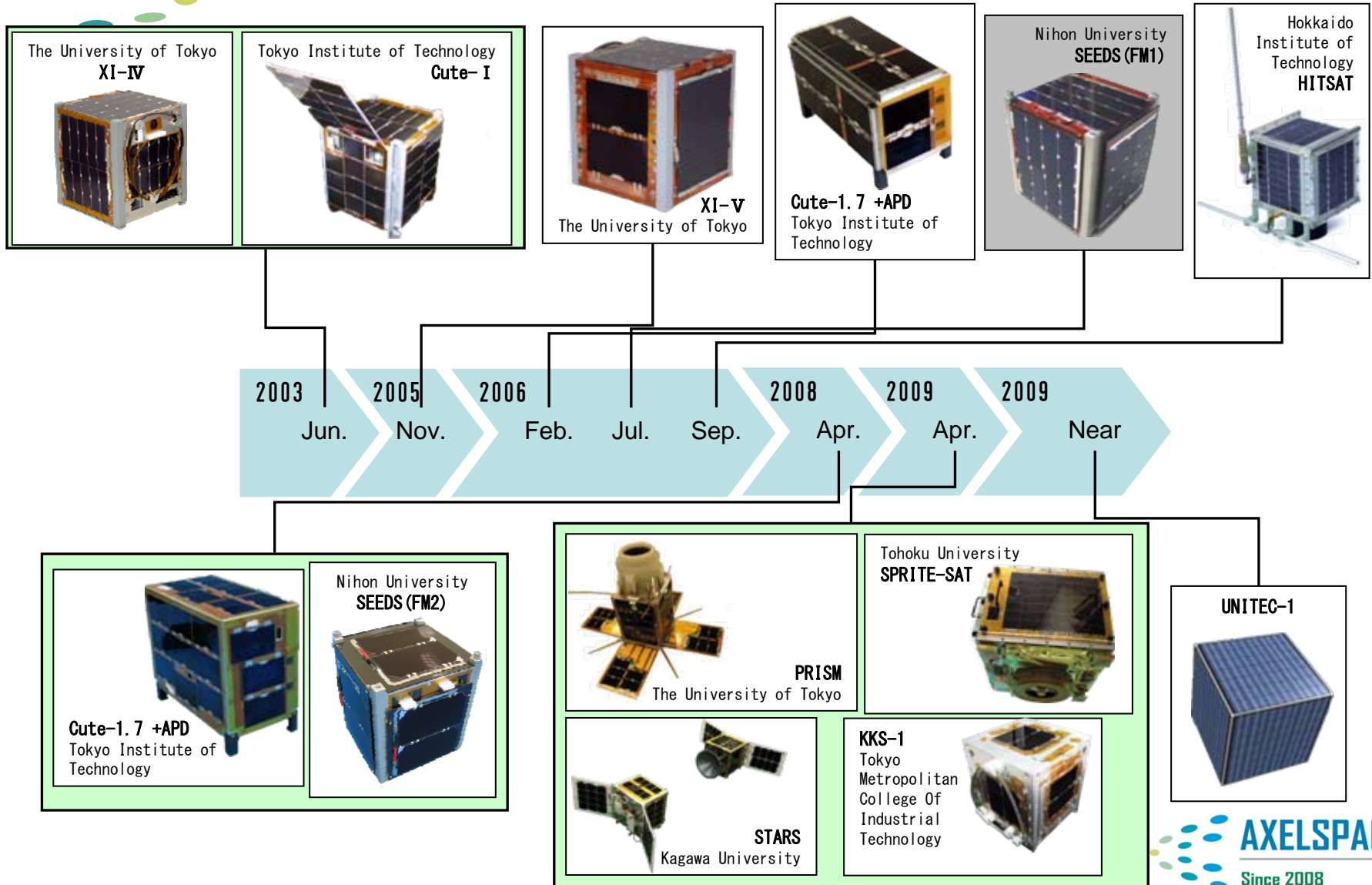
- Japanese Nano-satellite development started from Satellite Design Contest in 1993.
- When the concept of CanSat and CubeSat were introduced to Japanese university students, they were ready for moving to the stage where they make real satellites.



Japanese Recent History of University Small Satellite Activities

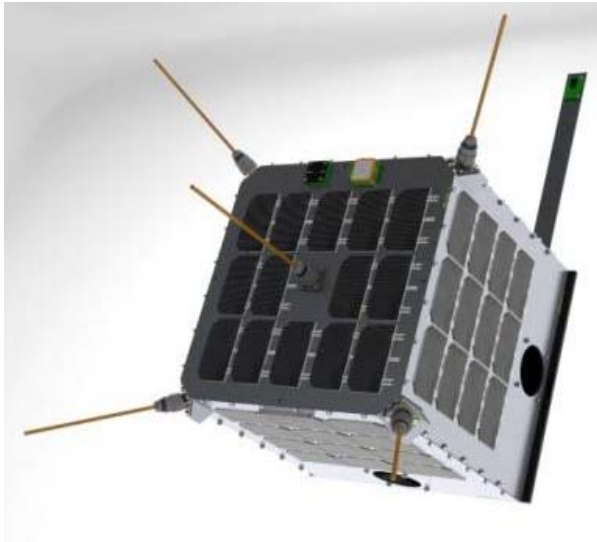


Japanese University Satellites Development



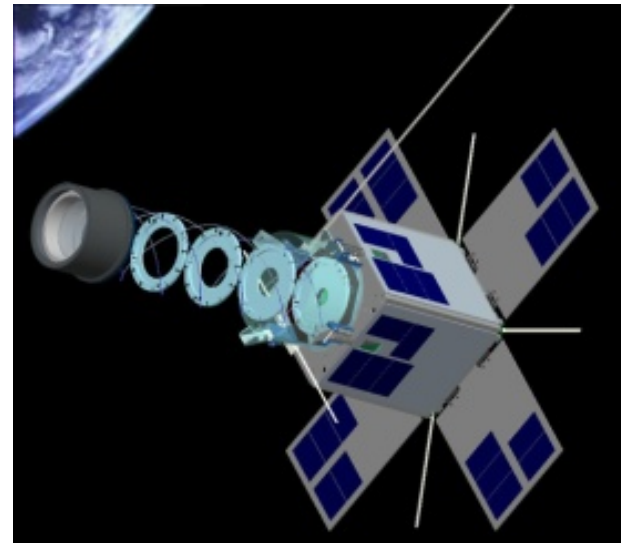
Examples of Nano-satellites

WNISAT (AXELSPACE)



Monitoring of the ice
in the Arctic Ocean
(10kg)

PRISM(Univ of Tokyo)



Equipped with a
dioptric system using
an extension boom.
The ground resolution
was 30m. (8kg)



Contest Steps



- 1st round: extended abstract evaluation step
 - The winners will be given a ticket to Japan to participate in the final presentation stage.
- 2nd round: paper and presentation step
 - Finalists will submit final paper and make a presentation in Tokyo.
 - The best idea will be selected and awarded.

Background (2)



- Nano-satellite has potential to open a door to change the way of space development, space industry, and/or space science due to the cost and approach. (even university students can do!)
- Compared to big satellites, the function of nano-satellites is limited due to physical limitation caused by the size.
- Constellation will provide satellite users with various merits such as higher time resolution, robustness as the whole system (graceful degradation) and wider coverage, etc.



Sustainable Project

- Sustainable projects using Satellite Constellation would require continuous investment.
- Who will pay for what?
- Who will get benefits?
- Who should (really) be responsible for this project?



Possible scenarios

- 1 . Proving usefulness of data made by nano-satellite constellation would increase the number of customers and potential customers.
- 2 . Making infrastructure such as GPS using nano-satellite constellation would , the impact of lost would be huge. Then, the project will be sustainable.
- 3 . University Educational satellites would join a constellation project. Then, educational needs would make the project sustainable.



A tool for sustainable projects

System Dynamics

A methodology developed for studying and managing complex feedback systems, such as one finds in business and other social systems. The concept had been developed by Professor Jay W. Forrester at MIT in the early 1960s.

It helps to identify limits to growth in a systematic way and to get the big picture of the business system in order to make the right choices for increasing the benefits of innovation activities.

Organization



- Organizer and Secretariat: AXELSPACE Corporation
- Co-organizer: Nano-satellite Center
- Sponsor: University of Tokyo First Program (government fund)
- Review Team (7 reviewers)
 - Decide Requirement, guideline, rules, evaluation criteria
 - Select finalists at paper evaluation stage
 - Select winners at final presentation stage
- Regional Coordinator (currently 8 coordinators)
 - Facilitate participation in each region
 - Disseminate information to each region
 - Support participants



Review Team



Chair: Dr. Jerry Sellers,
[Teaching Science & Technology, Inc.](#), USA

Prof. Sir Martin Sweeting, [SSTL](#) and SSC, UK

Dr. Rainer Sandau, IAA, formally DLR, Germany

Prof. Herman Steyn, [Stellenbosch University](#), South Africa

Dr. Masaya Yamamoto, [Weathernews Inc.](#), Japan

Prof. Hiroshi Kawahara, [Cyber University](#), Japan

Prof. Shinichi Nakasuka, [University of Tokyo](#), Japan



Regional Seminar Coordinators

- Africa
 - Egypt: Prof. Mohammed Khalil Ibrahim, Cairo University
 - Kenya: Mr. John Mugwe, Afrosoft
- Asia
 - Singapore: Prof. Low Kay Soon, Nanyang Technological University
 - Korea: Prof. Hyochoong Bang, KAIST
- Europe:
 - Germany: Dipl. Inform. Marco Schmidt, Würzburg University
 - Spain: Dr. Fernando Agelet, University of Vigo
- America:
 - Mexico: Dr. Esaú Vicente Vivas, Instituto de Ingeniería, UNAM
 - Brazil : Dr. Fernando Stancato, University of São Paulo
- And more····.



Roles of Regional Seminar Coordinators

- Understand the concept and rules of the contest
- Disseminate the information of the contest to your region
- Organize a seminar to facilitate participation (in your language).
- Support the participants in your regions
- Raise questions/comments





Contact



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