

Space environment research activities of Vietnam

SEU working group session

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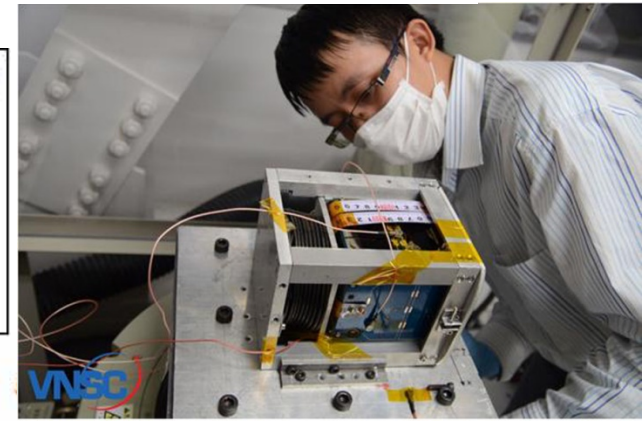
Space utilization in Vietnam

Pico dragon satellite

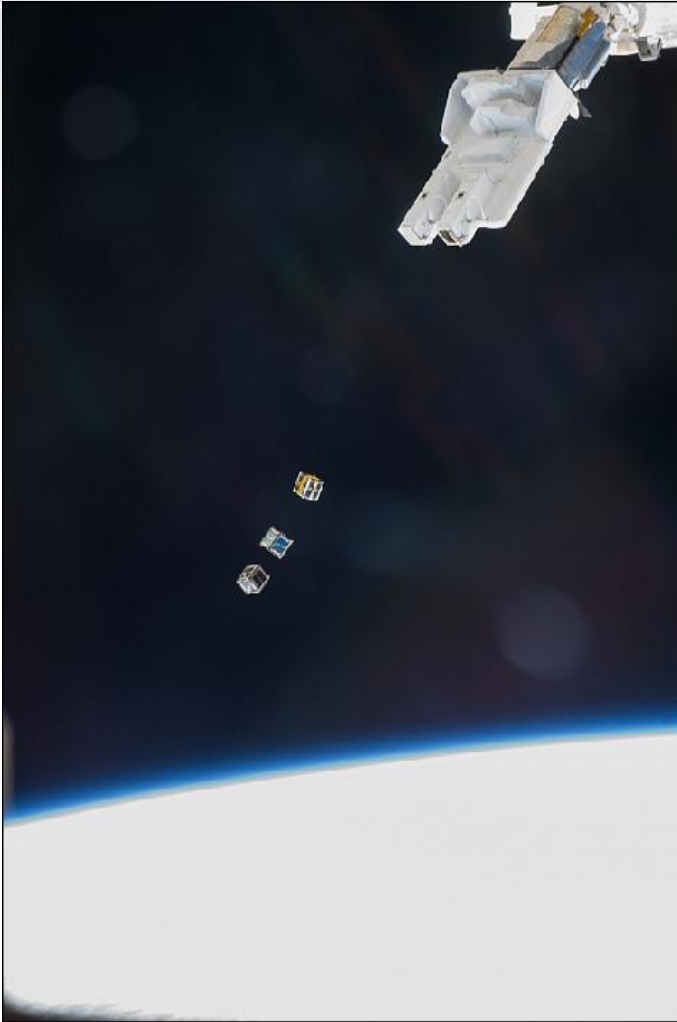
Size	100 x 100 x 113.5 mm
Mass	0.984 kg
Operating life time (expected)	3 months
Orbit	Initial altitude ~410 km, inclination = 51.6°
Sensor complement	<ul style="list-style-type: none">- CMOS camera (640 x 480 dpi), to take some images of the Earth- 3-axis angular rate sensor (yaw, pitch and roll)
RF communications (amateur radio links)	<ul style="list-style-type: none">- 100 mW CW beacon is on 437.250 MHz- 1k2 bps AFSK 800mW AX.25 telemetry downlink on 437.365 MHz- VHF uplink for commands



(Source: VNSC)



Space utilization in Vietnam



Pico dragon satellite

Purpose:

- Promote the development of space technology sector.
- Capacity building for self-designing and making Vietnam's own earth-observation small satellites in the future.

First signals from Pico Dragon were received on Nov. 20, 2013 by several stations around the world, including the VNSC ground station

*Deployment of three CubeSats from the from the J-SSOD deployer of the Space Station on Nov. 19, 2013
(image: NASA)*

Space utilization in Vietnam

NanoDragon

- Standard size: Cubesat
- Expected to be launched: 2018



Size	3 U (100 * 100 * 340.5 mm)
Mass	5-10 kg
Orbit	400 – 600 km
Purpose	Take pictures of the Earth Test satellite technology
Development time	2 years

Expected specifications of NanoDragon

Space utilization in Vietnam

- This project is designed by a team made up of 100 percent Vietnamese engineers and experts.
- A 50kg satellite called MicroDragon will also be developed and is expected to be launched after NanoDragon. By 2020, Vietnam will be capable of manufacturing and operating LOTUSat 2 – a commercial satellite weighing 500kg.
- The launching of the upcoming NanoDragon looks promising. Many other potential opportunities for Vietnamese engineering will come with the rise of the local space industry.

Responses to space environment research activities in Vietnam

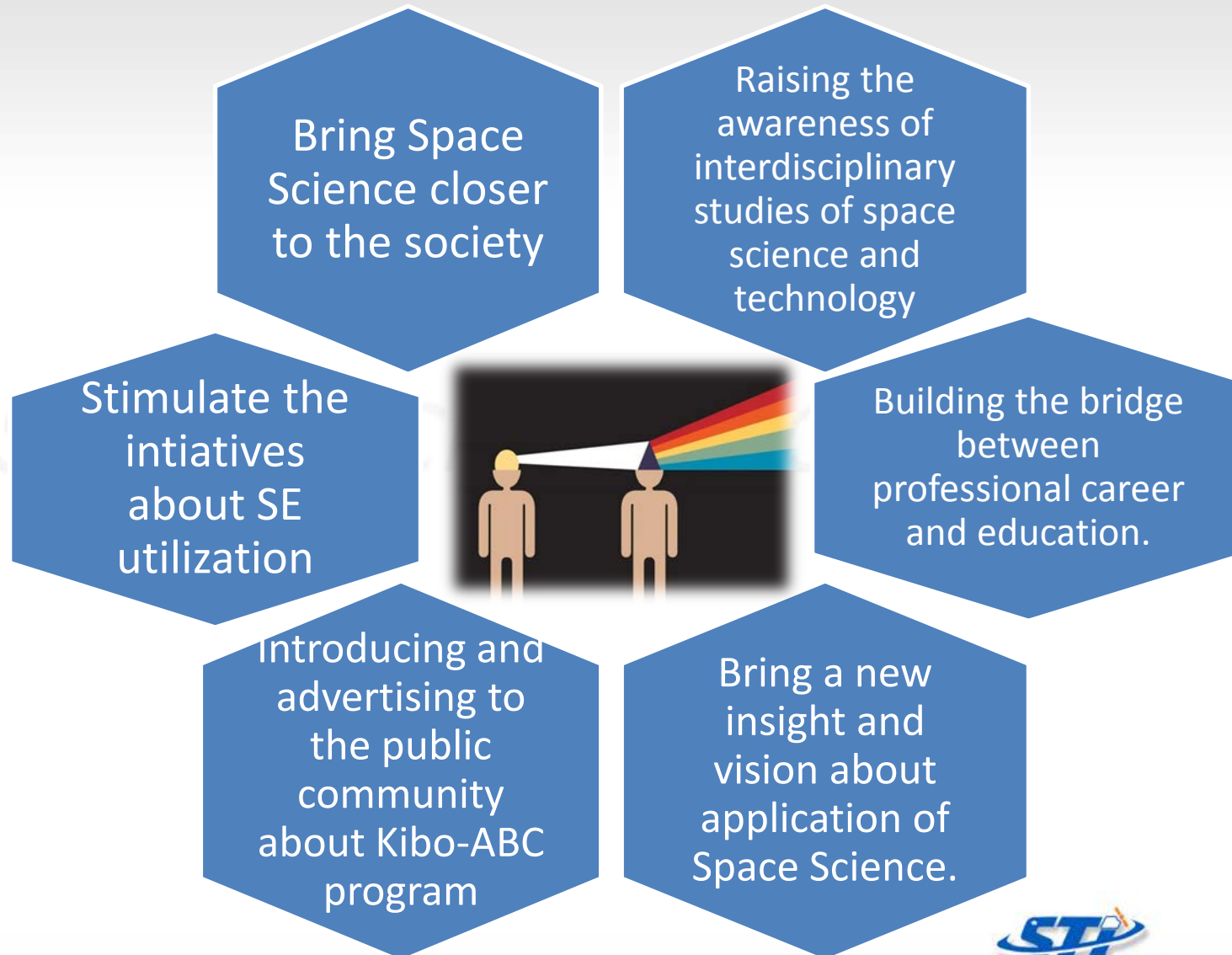
- Space environment research activities attract a lot of attentions from the society.
- Initial results and knowledge exchange were practically impressive to the whole participants in scientific research manners.
- Students and teachers expect to conduct more diverse experiments related to Space environment utilization.
- More organizations, schools and universities want to be involved in Space environment research activities
- Supports from JAXA was very crucial and helpful



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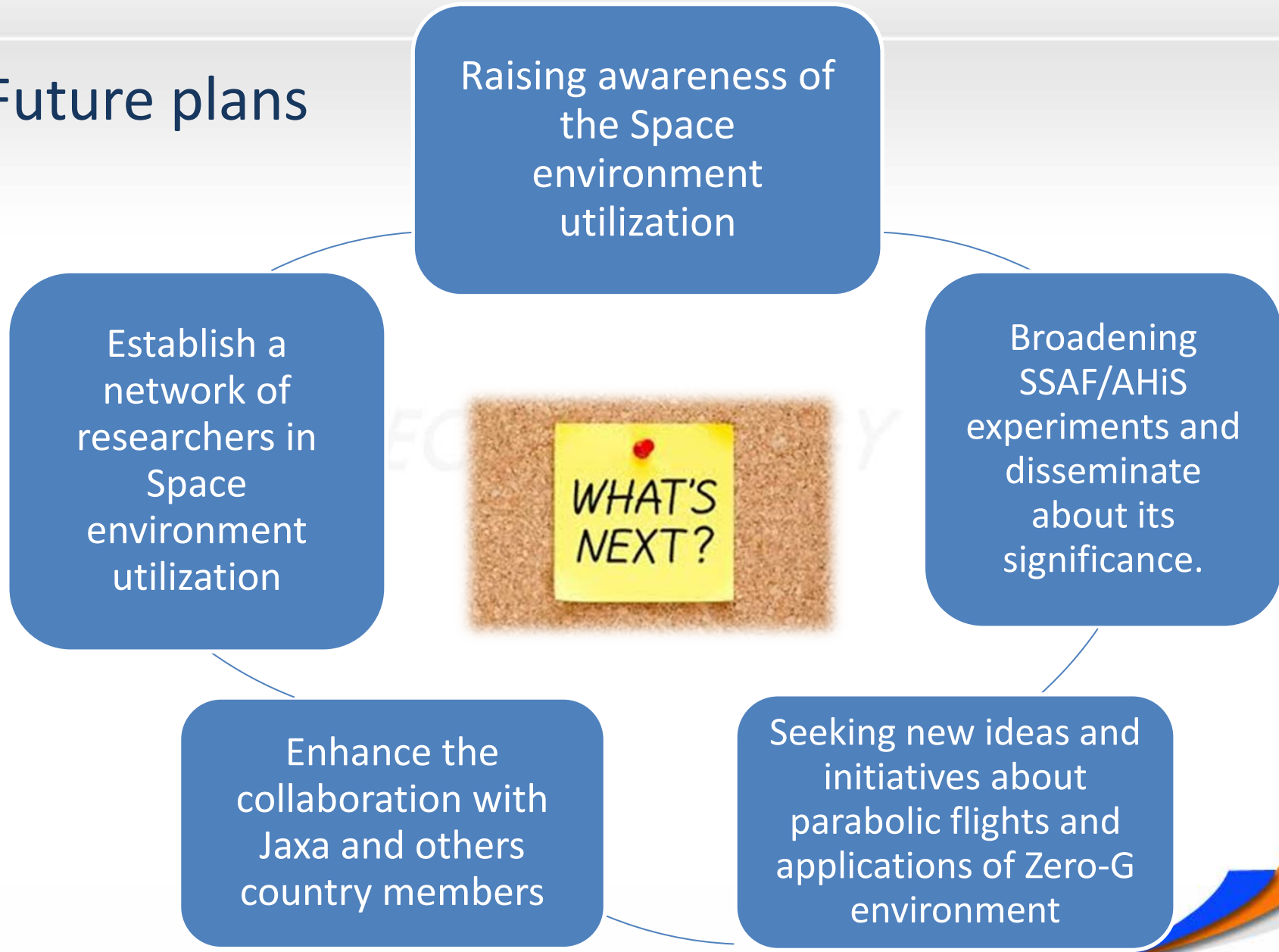


Influences of space environment research activities in Vietnam



Future plan, prospect and challenges.

Future plans



Future plan, prospect and challenges.

Prospect:

- Have new opportunities in space environment utilization and get benefits from the unique platform of Kibo.
- Build the capacity to access to space and its application for sustainable development.
- Completion of the experiment with proposed ideas and hypothesis.
- Expand the achievements of space environment utilization by conducting productive cooperation programs.

Future plan, prospect and challenges.

Prospect:

- Receive JAXA continuity supports for Kibo-ABC program.
- Maintain a network among the participating groups.
- Develop feasibility studies related to space environment utilization such as: human health research, material research, tele-epidemiology research.
- Deploy satellites based on our individual needs.

Future plan, prospect and challenges.

Challenges:

- Limitation of human resource.
- Maintaining funding for activities related to space environment experiments is an issue.
- The interdisciplinary among space science and other fields is not so strong and tight.
- The connections among participants groups is not established



Summary

- Vietnam is on the way to develop satellite technology, starting from Cubesat.
- Initial response and influences of activities related to SEU in Vietnam is promising.
- Vietnam plans to expand space environment research and experiments, stimulate initiative about SE utilization.
- Limitations about knowledge, experience and human resource are main problems.
- The supports from Jaxa and collaboration with other county members are necessary.



Thank you for your
attention!