



United Nations/ Malaysia  
Expert Meeting on Human Space Technology



# THE PHASE I OF THE SPACE SEED FOR ASIAN FUTURE 2010-2011 PROGRAM IN VIETNAM AND THE LESSONS LEARNED

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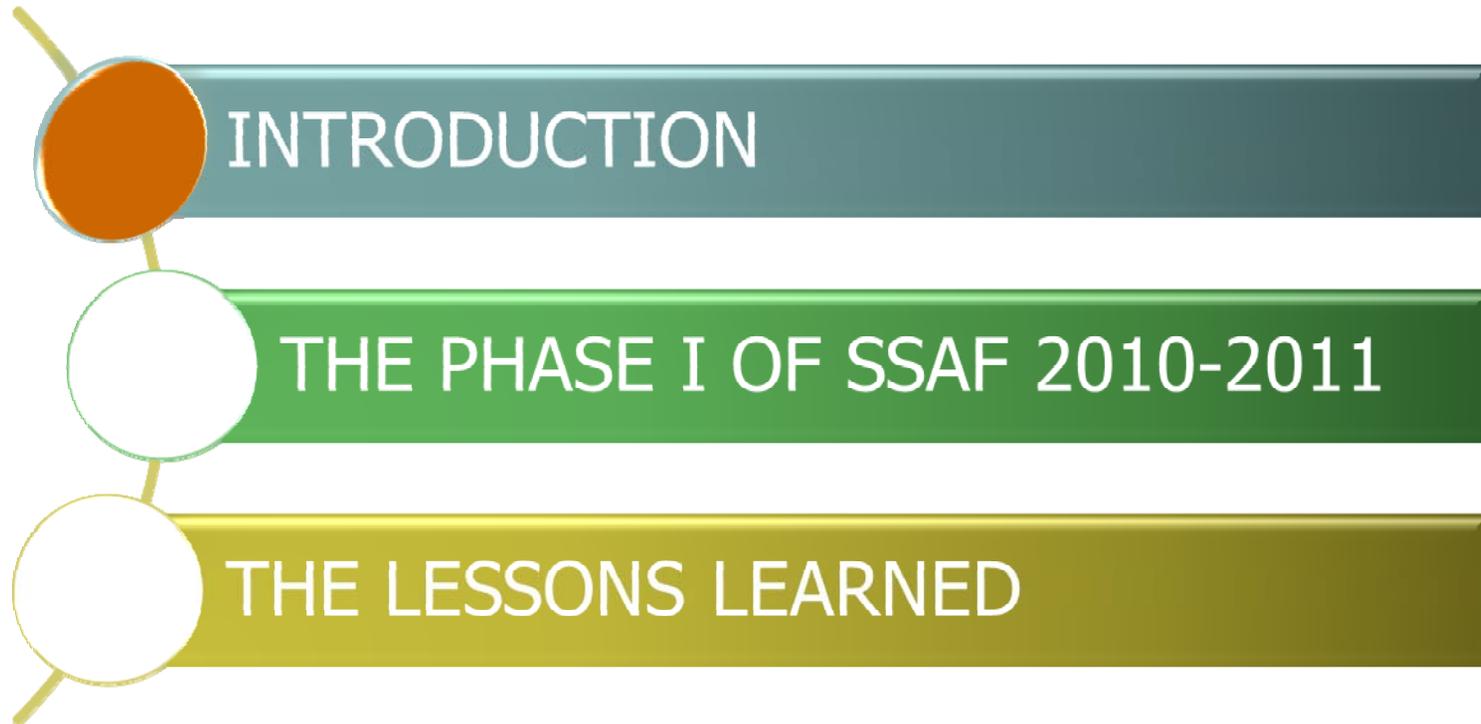
**14 – 18 November 2011**

***Pullman Putrajaya Lakeside Hotel & Resort, Malaysia***



11/25/2011

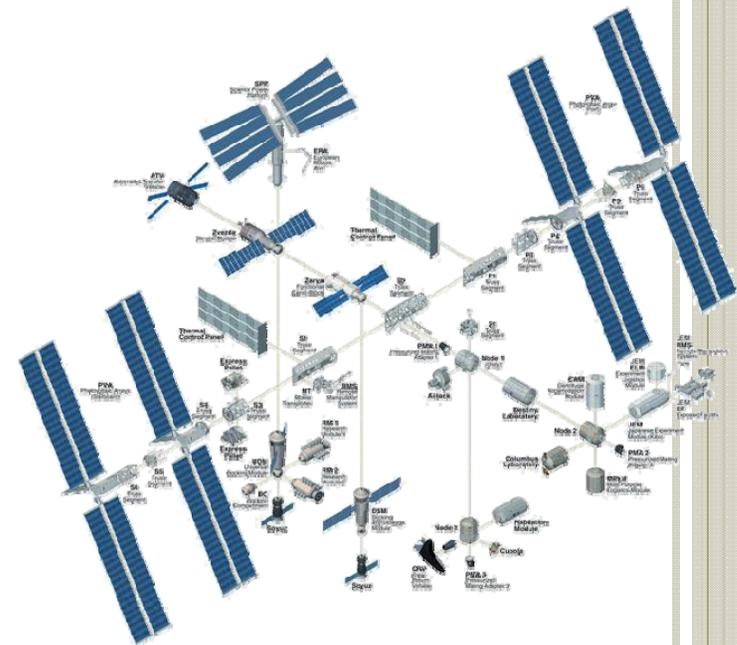
# OUTLINE





# INTRODUCTION

- The Space Seed for Asian Future (**SSAF 2010-2011**) Program is the utilization of the Japanese Experiment Module “KIBO” of the International Space Station by countries in the region. This is a good opportunity that we can study, work and exchange experiences. This opportunity will increase the solidarity between countries participate together.
- **Put the seeds on the KIBO** module under the International Space Station - ISS and then **bring it back to the earth** for experimental research. This program is very good and useful.
- The program has six participating countries that are **Japan, Indonesia, Korea, Malaysia, Thailand and Vietnam**. It is not only a bridge between scientists of the participating countries in scientific research, but also outreach to students in universities and help them to better understand about space and applications of space so they love and passion for Aerospace sector.





# INTRODUCTION

- **Space Technology Institute (STI)** – Vietnam Academy of Science and Technology (VAST) participates in this program as a condition and see it as a good luck for a young institute that pioneer the field of space technology in Vietnam. The seed program was launched in Vietnam in June 2010.
- Local activity plan in Vietnam will be performed and organized by **Space Technology Institute** and **Tay Nguyen Institute of Biology**. This program will be received special assistance of Dr. Duong Tan Nhut who is working at the Tay Nguyen Institute of Biology in Dalat, Vietnam and coordinated with related agencies and collaborators.
- Through collaboration and implementation of the seed program, researchers who have participated it, have been given opportunities to work, study and learn from experiences of the participating countries. Vietnam has sent three different kinds of flower seeds with the scientific name: **Impatiens balsamina**, **Antirrhinum majus**, **Salvia splendens**.



# TARGET

- To **study characteristics** of the flower seeds under the influence of space environment on color, shape, size of the flower, etc. Since then consider the possibility of mutation of the flowers.
- To **develop skills** in scientific space research and experiments for the researchers and students.
- To **promote and publicize** the space utilization activity for pupils, students as well as children in some schools and universities in Vietnam. Students will learn how to conduct a scientific experiment and may be inspired to pursue further education in the fields of science and technology.

# CONTENT OF SSAF 2010-2011 PROGRAM IN VIETNAM



## **Phase 1:**

The seeds is selected and put them on the KIBO Module.

The returned seeds will be cultivated with suitable living conditions such as light, temperature, humidity, etc. Then study on influence of micro-gravity environment on the changes, mutations of the flowers.

**Phase 2:** The pupils, students and children will participate in monitoring the growth of the seeds in the laboratory and write reports on what they collected and observed.

# SCHEDULE OF SSAF 2010-2011 IN VIETNAM



|         | No. | Contents  | Duration (time)                 |
|---------|-----|---|---------------------------------|
| Phase 1 | 1   | Seeds sample consists of 100g of four types of seeds. These seeds are exposed to micro-gravity environment.   | 2 months<br>(Jan – March 2011)  |
|         | 2   | - Cultivating in the laboratory and in the natural<br>- Study on germination and quality of seeds   | 2 months<br>(April – May 2011)  |
|         | 3   | Study on the changes and mutations of the flowers:<br>-Compare the growth and development between the space seeds and original seeds.               | 4 months<br>(April – July 2011) |
|         | 4   | Report and Documentation on results of studying on flowers and seeds.   | 6 months<br>(April – Sept 2011) |
| Phase 2 | 1   | Preparation for experimentations  | 3 months<br>(Oct – Dec 2011)    |
|         | 2   | - Select the students who participate in the program.<br>- Distribution of seeds and instruction to do the experiments.                             | 3 months<br>(Jan – March 2011)  |
|         | 3   | Implementation of experiments:<br>-Plant out flower seedlings.<br>-Study on germination, growth rate, seedling vigor, plant growth and development. | 4 months<br>(April – July 2011) |
|         | 4   | Observations and Write reports on what they collected and observed.   | 4 months<br>(April – July 2011) |
|         | 5   | Documentation of the activities of the program.   | 2 months<br>(Aug – Sept 2011)   |

# OUTLINE



# IMPLEMENTATION OF THE PHASE I

**Quarantine process overview**  
See below

Prepared seeds (disinfected and dried)

Ziploc Freezer bag Small (127 x 177 mm)

Quarantine

Get Signature of certificatory inside Ziploc by "Sharpie"

Get Phytosanitary Certificate

Closeout by 3M950 tape

Procedure See next page

Sharpie Non toxic Ultra Fine, Black

<http://www.sharpie.com/GlobalLanding.aspx?loc=ms>

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**Packing Procedure for "Seal Concept"**  
See below

Ziploc Freezer bag Small (127 x 177 mm)

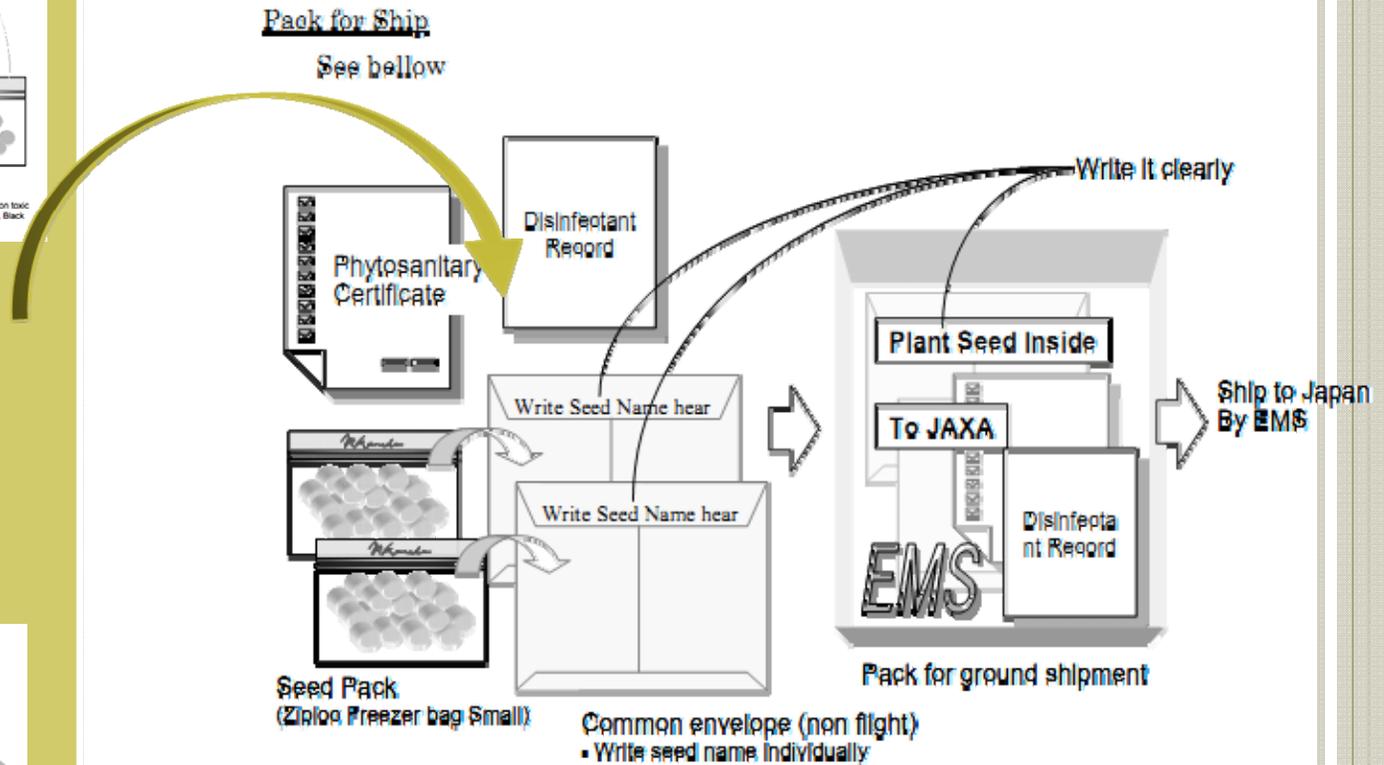
Get Signature of certificatory inside Ziploc by "Sharpie"

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Ziploc Freezer bag Small (127 x 177 mm)

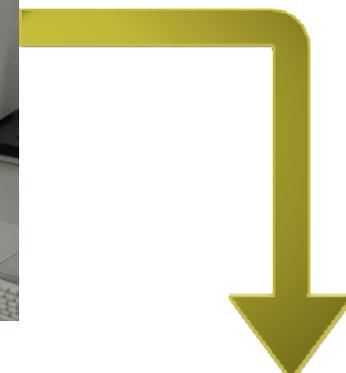
After signature, Ziploc will be closed by 3M 950 double-sided tape and sealed

<Caution>  
Once sealed by 3M950, it could not be opened without tear the bag

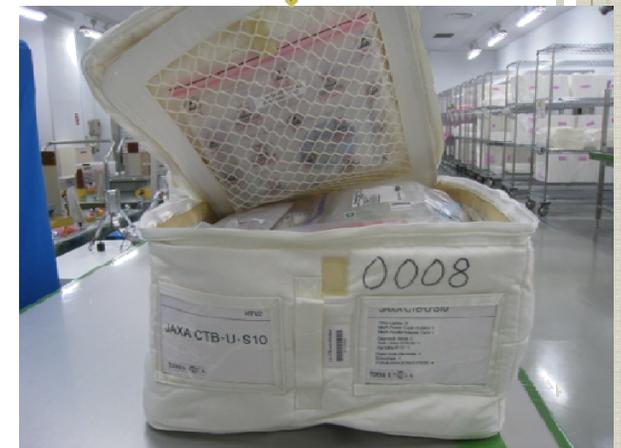


## Process to Pack for Ship

# IMPLEMENTATION OF THE PHASE I



The patch of  
SSAF 2010-2011 Program



# IMPLEMENTATION OF THE PHASE I



ISS027E008229



ISS027E008226

Space seeds on the Kibo module under  
the International Space Station

# IMPLEMENTATION OF THE PHASE I



## SSAF 2010-2011 Mission



HTV2(konotori)



HTV2 is captured by SSRMS

Internal HTV



H-2B Lift off  
Jan.22, 2011



Seeds in ISS "Kibo" Module

180 Days Mission



Recovery June 1, 2011





# IMPLEMENTATION OF THE PHASE I



**The space seeds are  
came back to Vietnam**



# OUTLINE





# THE LESSIONS LEARNED

- 1. Packaging issues:
  - ❖ It's difficult to find and bought Marker pen and double sided tape (non-toxic) in Vietnam that could use for space flight
- 2. Shipping:
  - ❖ Sending seeds need to complete the relevant paperwork such as phytosanitary certificate, quarantine certificate, certificate for seed export. The seeds can only be sent by post office, do not send it by any other express services. If it is sent by other express services, the seeds will not reach the receiver and customs require returning the sender. In fact, we sent our seeds by TNT express. They reached Japan customs and to be required to return for sending an invalid.
  - ❖ Should have contingency plans as such as: backup seeds
  - ❖ For 5 days, the receiver will get the seeds.



# THE LESSIONS LEARNED

## ➤ 3. Procedure customs:

- ❖ Phytosanitary certificate: need 6 days to complete and then the phytosanitary is ready to collect.
- ❖ Quarantine certificate: need 4 days to complete and it is issued by the Plan Protection Department.
- ❖ Certificate for export: need 15 days to complete and it is issued by the Department of Cultivation
- ❖ Need to consider appropriate seed selection and avoiding the seeds that are banned from import and export of both Japan and Vietnam.



# RECOMMENDATIONS

- It is recommended to JAXA to **provide the guideline** and also **Standard Operating Procedure (S.O.P)** for receiving the seeds after comeback from space (e.g. quarantine process).
- JAXA can **organize courses about the utilizations of Kibo module** and combine with the Asian Winter School program for promotion and referral to those who participate in the program.



**Thank you for your attention**