

IAA Study Group Status Report

Responsible Commission: Commission III

Study Number and Title: 3.24 Road to Space Elevator Era

Short Study Description (repeat from Study Group Proposal):

This SG is the follow-up of the SG3.13 “Assessment of the Technological Feasibility and Challenges of the Space Elevator Concept” with the same baseline design assumptions.

Development of a unique space transportation system of the future, called a space elevator, should be accomplished with more international cooperation and should contribute to the overall development of space science and systems development. To accomplish these desires, projects are identified that can be accomplished in the near future leading to risk reduction and engineering enhancements. Specifically, the following practical on-orbit verification projects could be planned and promoted through this study group's activity.

- (1) Promotion of ISS (International Space Station) utilization and leveraging of Small Satellite (Cube, Micro, etc.) concepts to accomplish on-orbit verification; such as, advanced material research (ex. material exposure experiment) and development while extending tether technology development.
- (2) Promotion of space technology spin-out into industrial application (and vice versa) by the collaboration with civil engineering, architectural engineering, and space engineering experts.
- (3) Plan and execute precursor missions, leveraging existing technology, to demonstrate prototype space elevator segments. (ex. Marine Node for sub-orbital rocket launch; tether satellites for dynamics of deployment; movement around Earth-space with low thrust, high efficiency rocket motors demonstrating start-up activities.)

Progress in past six months:

- (1) 2 meetings was held in Paris (March, 2015) and in Seattle (August, 2015).
- (2) Several updates of Space Elevator Mission Definition Document (SEMDD) for IAA Study Development based on past IAA study result and other inputs from study group members. This product will be used as a tool for reviewing the advancement of critical technologies required to implement the Space Elevator.

Website Study Information update: (please give any update regarding Study Group Membership, documents, Study Plan and Schedule):

- (1) On the Activities, please add the following meetings:
-Study group meeting, Monday 12 October 2015, 08h00-09h00, Jerusalem, Israel

- (2) On the Activities below, please link minute of meeting file as Ms. Sakurako Takahashi provided by e-mail on 19 Sep as a response of “IAA status report form for study group 3.24 (IAC 2015 Jerusalem)”
- Study group meeting, Monday 23 March 2015, Paris, France
- Study group meeting, Thursday 20 August 2015, Seattle, USA

Issues requiring resolution? (recommend approach):

None

Product Deliveries on Schedule? (If modified explain rationale):

No change

Study Team Member Changes? (List any Study Team Members that you wish to discontinue, and provide names plus contact coordinates of any Members you wish to add on the second page of this Study Update form.) Note: Complete contact information including email, tel. and fax must be provided for all additions. Only Members with complete contact information will be listed and receive formal appointment letters from the IAA Secretariat.)

No change

Name of person providing Study Group Status (Study Group Chair or Co-Chair):

Mr. Akira Tsuchida

Status Report Date: September 27, 2015