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Interactive Presentations - 51st IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE ACTIVITIES (IP)

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"HOOPOE NANO-SATELLITES CONSTELLATION (ISRAEL 70)" – A POTENTIAL TEST-BED FOR DEALING WITH SPACE BIG DATA

Abstract

Big-Data is a trending topic in recent years in the industry in general and in the space sector in particular. The amount of data produced, handling it and the technical issues arising from it are of major importance for the upcoming space projects. This issue was studied in many previous works, including a team project conducted in ISU's space studies program that was held in Israel in 2016 and its results were presented in IAC2016. They studied the space big data topic in accordance with the ISU's 3Is philosophy – international, intercultural and interdisciplinary.

The following paper is a result of the SG[Israel]2017 workshop, an annual SGAC local event that took place in Israel during the Ilan Ramon International Space Conference. In this workshop, 13 young professionals from diverse professional and occupational backgrounds studied the findings of the ISU's team project and distillated the results that might be relevant to a small country like Israel. In this paper we present our main ideas and recommendations from the workshop. In order to gain insights into space bid data problems, we suggest using an Israeli social project as a study case, "Hoopoe Nano-Satellite Constellation" (Formally known as "Israel70", hereafter HNSC), that is planned to be launched continuously for a few years, stating of this year. From this project it is possible to learn how space big-data challenges might emerge and test different approaches of dealing with it. The mission of HNSC project is to build and launch a swarm of 70 nano-satellites to celebrate Israel's 70th Independence Day that takes place in May 2018.

The satellites are planned to be built by academia and high-school students across the country, in 70 different development centers. Although the satellites are part of a single project, there is no central mission design. Each high-school has the ability to plan and implement its own algorithm, database design and communication protocols. Moreover, some schools will have their own ground control center, a situation that might cause many big-data related issues such as information duplication and different data base organization. All of the above make HNSC into a perfect testing ground for space big-data, therefore we suggest designing a scheme to examine key issues of space big-data and implement them through a study of the development of the project. Our aim is to gain knowledge and understating that can sever future projects of the same or larger scale.