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Author: Mrs. Maya Bartov
Hebrew University of Jerusalem, Israel

Mr. Yevgeny Tsodikovich
Tel Aviv University, Israel
Ms. Vera Gutman
SPACECIALIST, Israel
Mr. Dan Cohen
ISU, Israel
Mr. Roy Orbach
Israel

“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 the summer of 2016 and its results were presented in IAC2016. They studied the space big data project 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 year's workshop, 13 young professionals from diverse professional and occupational backgrounds studied the findings of the ISU's team project and distilled 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 big data problems, we suggest using an Israeli social project, “Israel 70”, that is planned to be launched continuously for a few years, starting of next year, in order to learn how space big data problems might occur and test different approaches to dealing with it. The mission of “Israel 70” project, is to build and launch a swarm of 70 nano-satellites to celebrate Israel's 70th independence day that takes place in May of 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 algorithms, database design and communication protocols. Moreover, many of the schools will have their own ground control center, a situation that might cause many big data related issues such as information duplication. All of the above make “Israel 70” into a perfect case study for space big data, therefore we suggest designing a scheme to examine key issues of space big data and implement those in through a study of the development of the project. Our aim is to gain knowledge and understanding that can serve future projects of the same scale or of larger scale.