

Ask a Winner – UNOOSA Webinar

DropTES 3rd Round

Analysis of Scaled Robotic Arm Manipulators under “Artificial” Gravity Conditions



*Presented by:
Moacir
Fonseca
Becker*

KiboCube 5th Round

Morazán Satellite Project



TEC | Tecnológico de Costa Rica



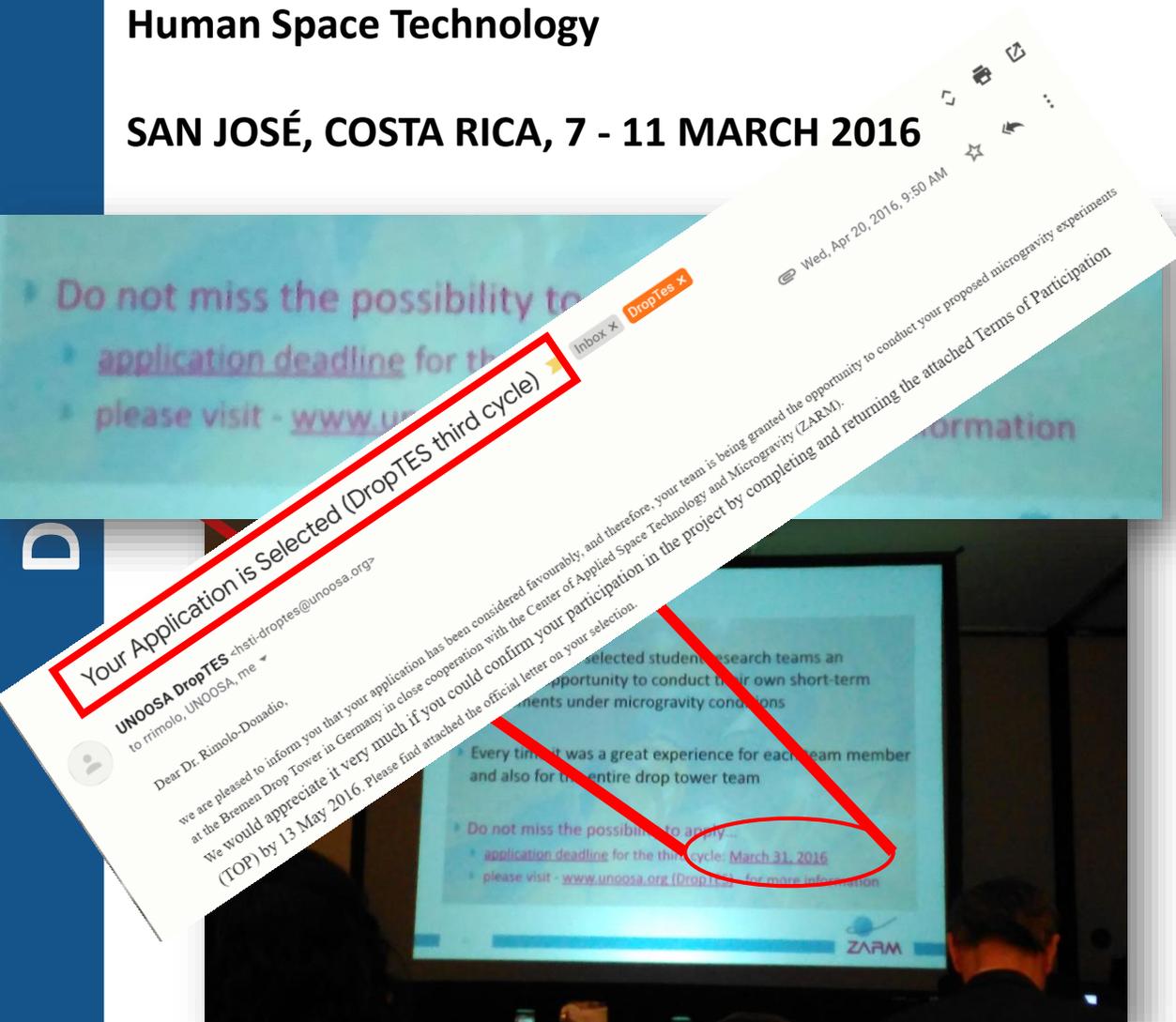
SICA
Sistema de la Integración
Centroamericana



How did you learn about the opportunity?

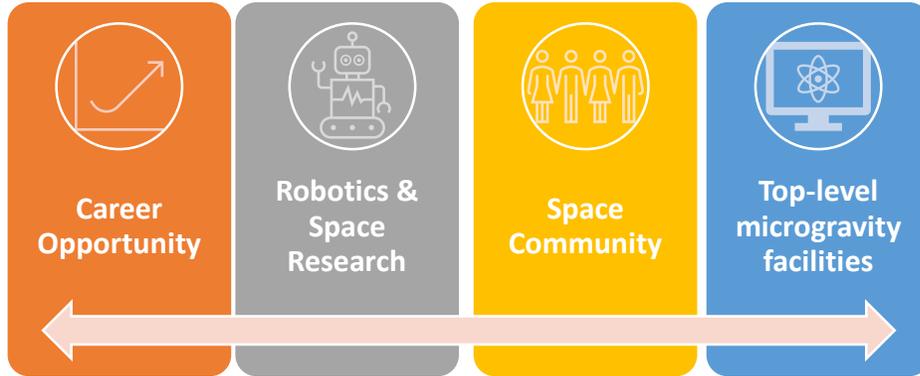
United Nations/Costa Rica Workshop on Human Space Technology

SAN JOSÉ, COSTA RICA, 7 - 11 MARCH 2016



	Winner		Objective	Status of Satellite
1 st round Selected in 2016	KENYA: University of Nairobi "1KUNS-PF"		To monitor agriculture and coastal areas	- Deployed from ISS on 11 May 2018 - Re-entered atmosphere in June 2020
2 nd round Selected in 2017	GUATEMALA: Universidad de Valle De Guatemala "Quetzal-1"		To acquire remote sensing data for natural resource management	- Deployed from ISS on 29 April 2020 - On-orbit, collecting data
3 rd round Selected in 2018	MAURITIUS: Mauritius Research Council "MIR-SAT 1"		To collect thermal infrared images and to test onboard communication	- Currently under development
3 rd round Selected in 2018	INDONESIA: Surya University "SS-1"		To demonstrate remote communication	- Currently under development
4 th round Selected in 2019	MOLDOVA: Technical University of Moldova "TUMnanoSAT"		To demonstrate technology and test various components	- Currently under development
5 th round Selected in 2020	SISTEMA DE LA INTEGRACIÓN CENTROAMERICANA: "MORAZAN-SAT"		To monitor weather variables in remote areas providing early warning during extreme weather events	- Currently under development

Why did you apply? & How did the project originate?



(Image: © NASA)



(Image: © New Atlas)

Background – Irazú Project, the First Central American Satellite



Launch: April 2nd 2018

Project Director: Carlos Enrique Alvarado



USAC
TRICENTENARIA
Universidad de San Carlos de Guatemala



UNAH
UNIVERSIDAD NACIONAL
AUTÓNOMA DE HONDURAS

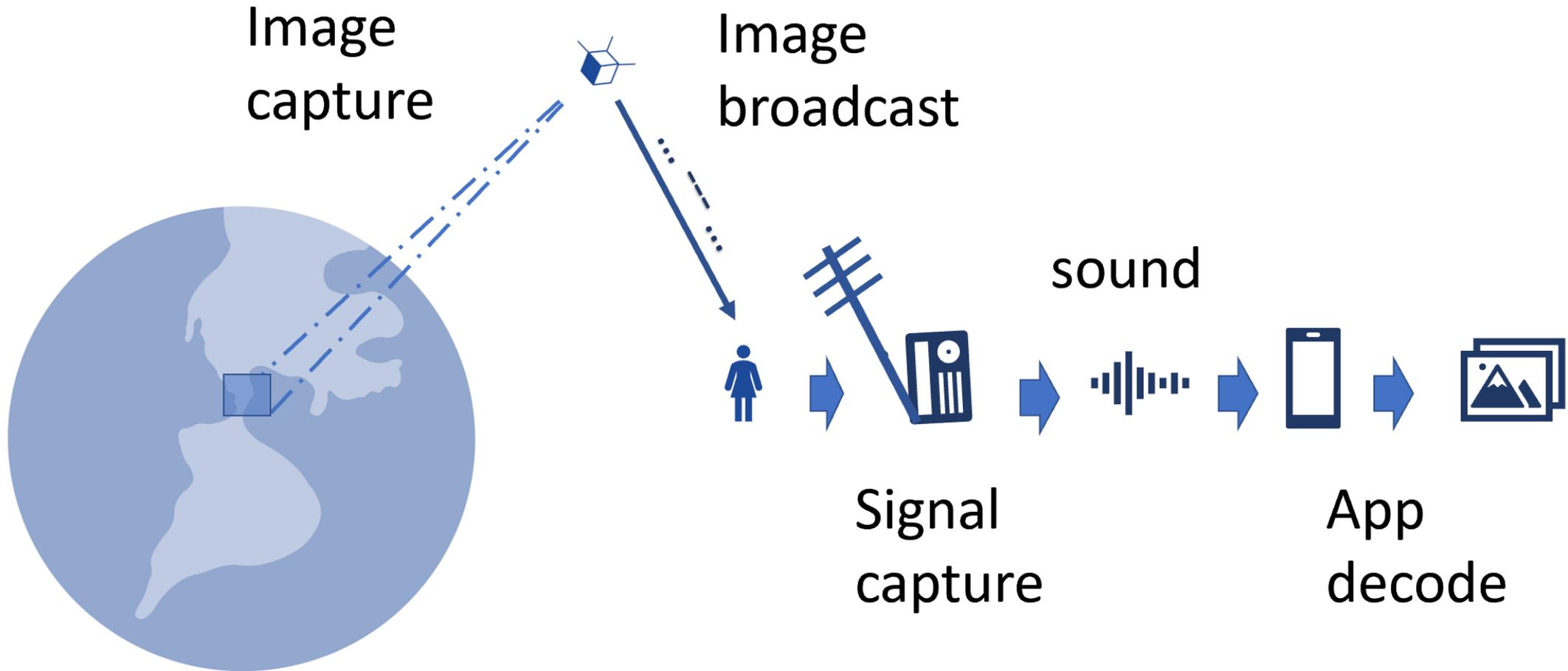


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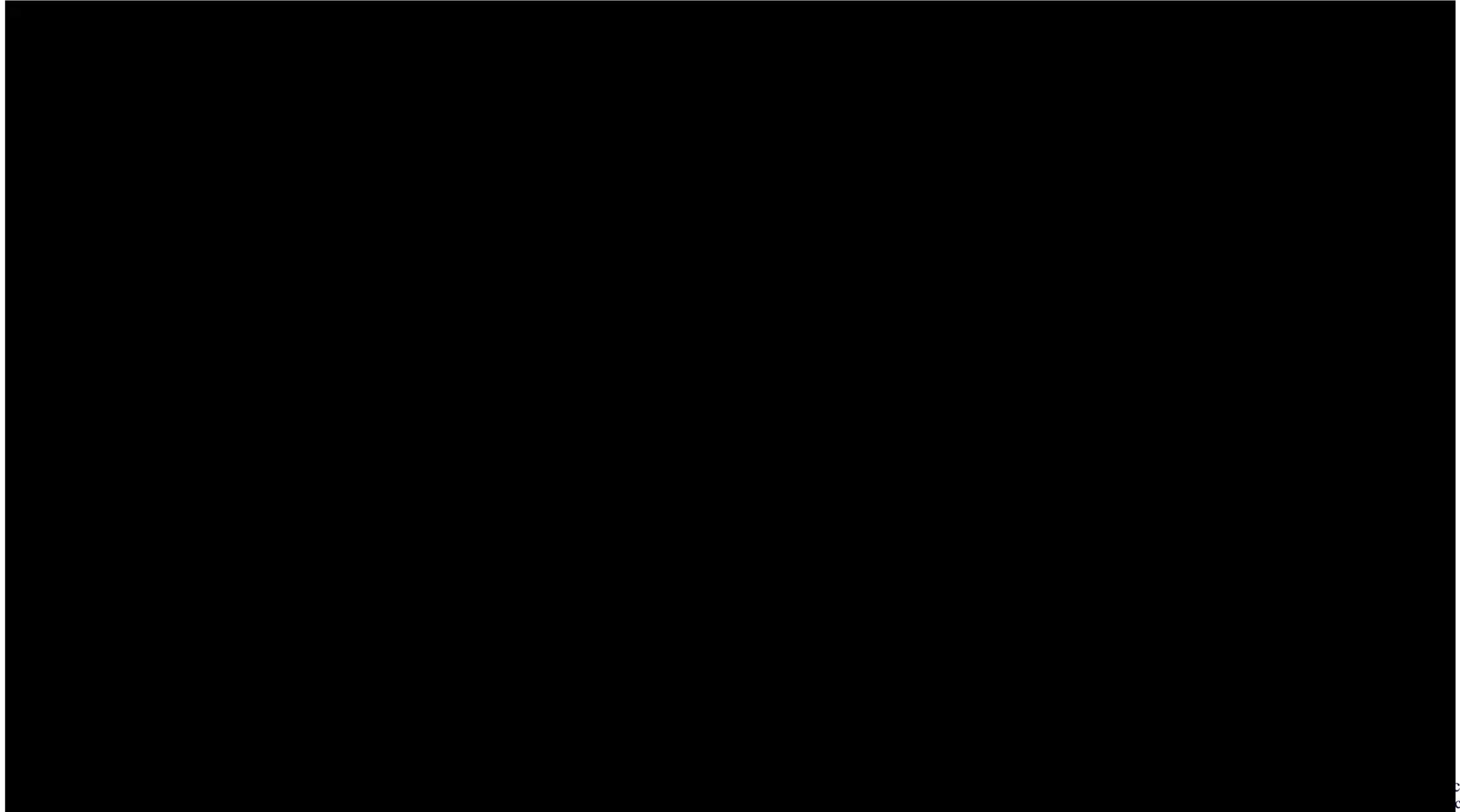


How did the project originate?

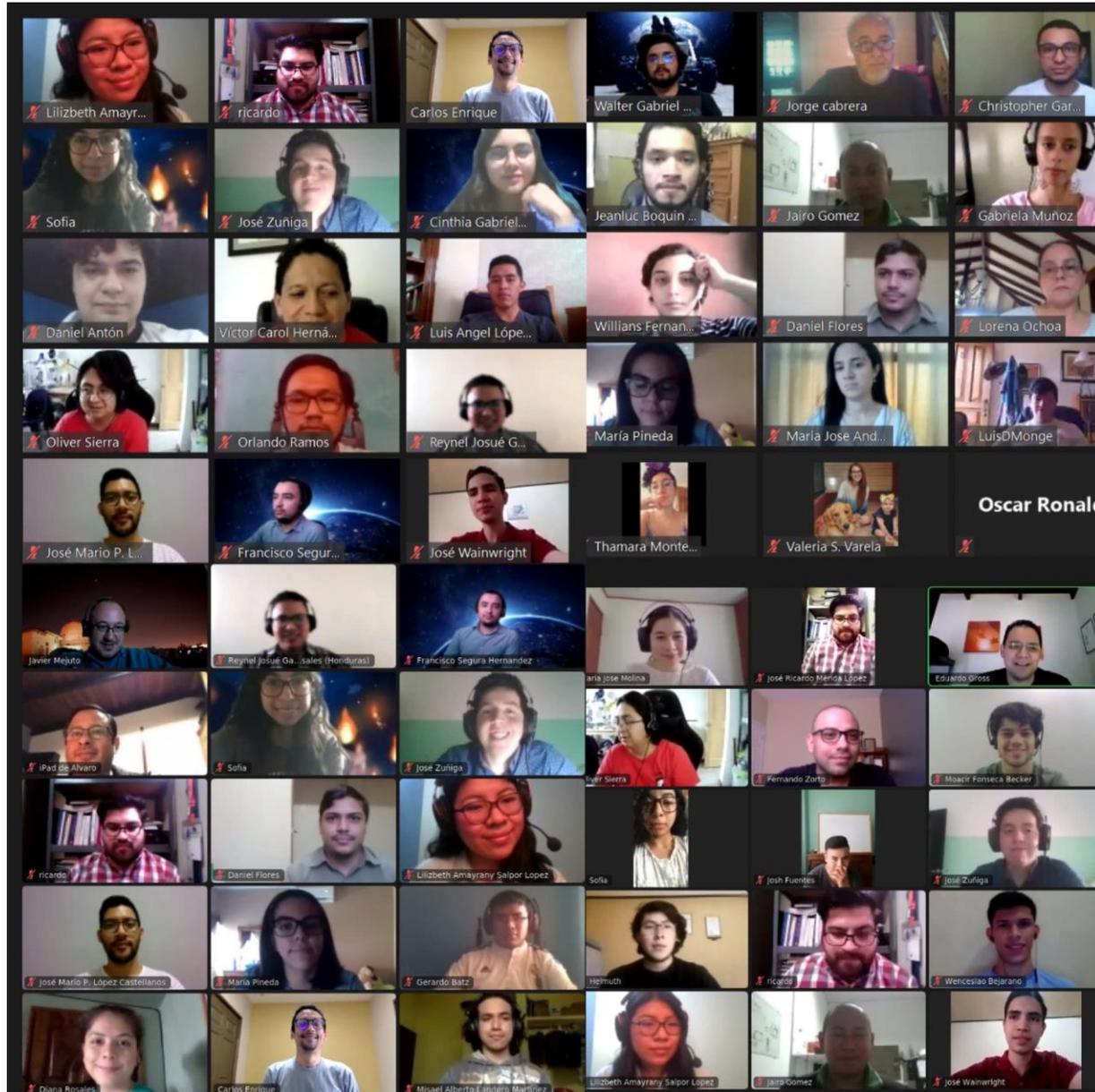
Mission 3



Drop video



First team presentation and development phase launch!



Outcomes After?

IAC-17-A2.3.

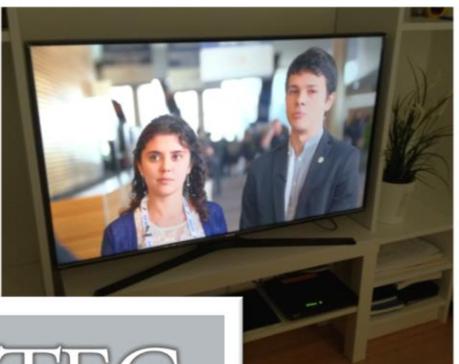
ANALYSIS OF SCALED ROBOTIC ARM MANIPULATORS UNDER MICROGRAVITY CONDITIONS

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This paper reports the results of a drop-tower experiment series with reduced gravity conditions performed under the United Nations Human Space Technology Initiative (UN-HSTI) (DropTES), at the Center for Applied Space Technology and Microgravity (CASTM). The tested prototype consists of two articulated arm manipulators with three degrees of freedom, installed on a rotating plate in the drop capsule. The forces on the structure during the sequence, were monitored during the fall through four load cell sensors per arm and an inertial measurement unit (IMU) sensor on the end effector of one arm. The results of the experiment are compared with analytical model predictions. A clear consistency with the gravity conditions could be identified, in consistency with the magnitude of oscillations in the microgravity environment are notably lower than those observed in the experiment. The structures is feasible for future sequences.



Investiga.TEC

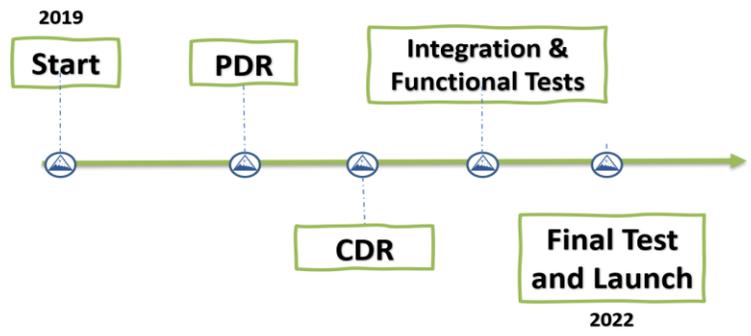
Mayo del 2017 Año 10. No. 29. ISSN 1659-3383



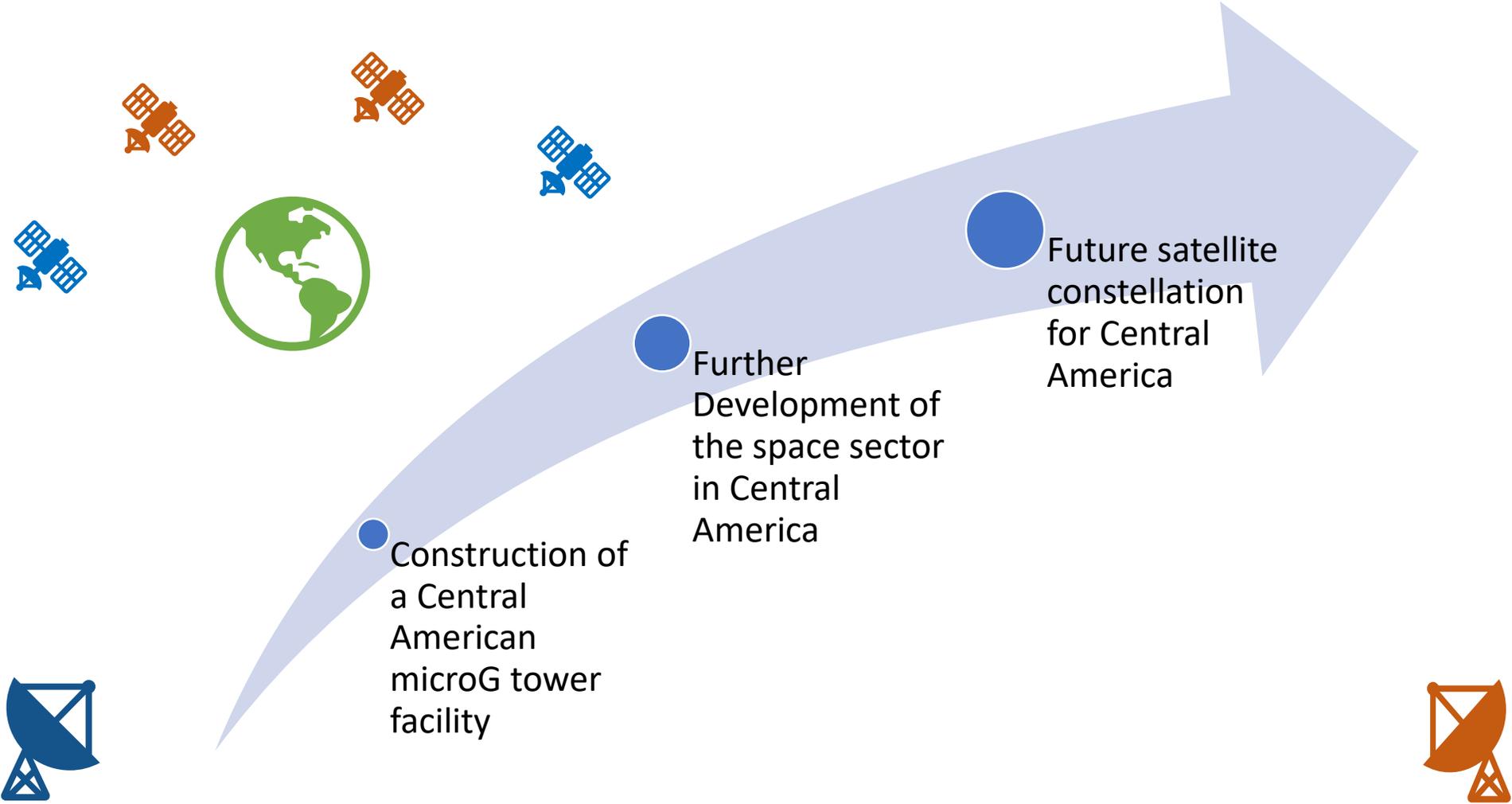
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Presentación (página 2) DropTES, Serie 18: Experimento en microgravedad con prototipo de brazos (página 14) Máquinas inteligentes (Smart Machines) (página 14)

-  Clear timeframes
-  Credibility
-  International Cooperation
-  Inspiring the youth



Hopes for the future?



Special Thanks To



UNITED NATIONS
Office for Outer Space Affairs



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