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CubeSats

the future of a revolutionary idea

Dr. Chantal Cappelletti


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Origin

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CubeSat Idea

Prof. Robert J. Twiggs

And

Prof. Jordi Puig Suari

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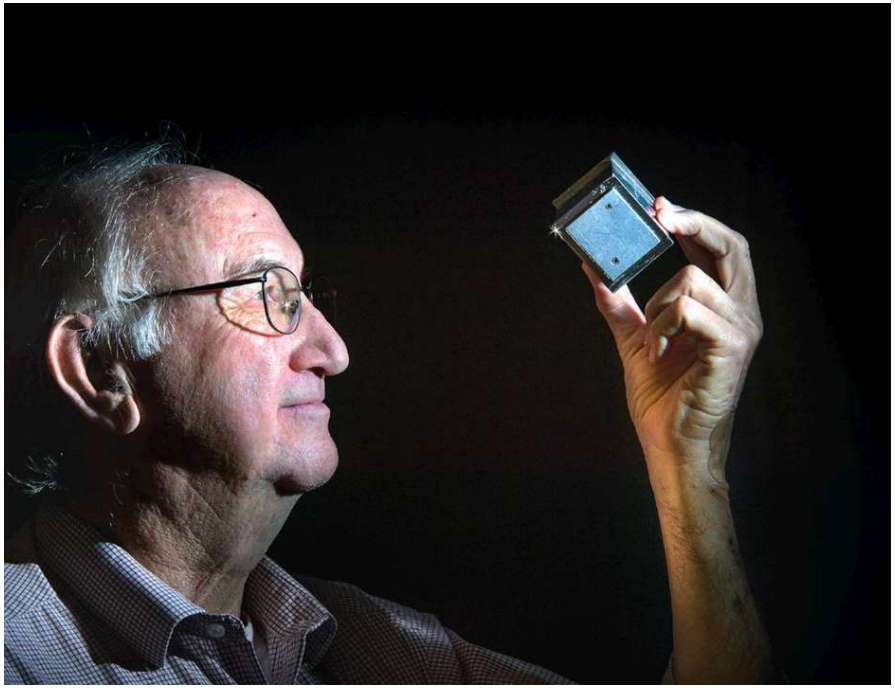
Origin



1998- Stanford University

«*The Aerospace Corporation wanted to launch a little satellite (picosat) the size of ice cream bar as part of a DARPA (**Defense Advanced Research Projects Agency**) program*»

CubeSat

Bob and Jordi **cooperation**

Launch Opportunity

- Picosatellite

Size

- Solar Cells donation from JPL
- 4 inches cube

Dimensions in SI

- **10 cm Cube**

Picosatellites Deployer

CubeSat

«At that time, beanie babies were the rage, so the cube I selected was a display case for the beanie babies»
R.J. Twiggs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Pioneers

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University Satellites - Nineties


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Revolution

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New Countries

First Peruvian satellite (PUCPSAT)
First Estonian satellite (ESTCube-1)
First Poland satellite (PW-Sat)
First Hungarian satellite (MASAT)
……

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New Business

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New Players

Companies

Military

Space Agencies

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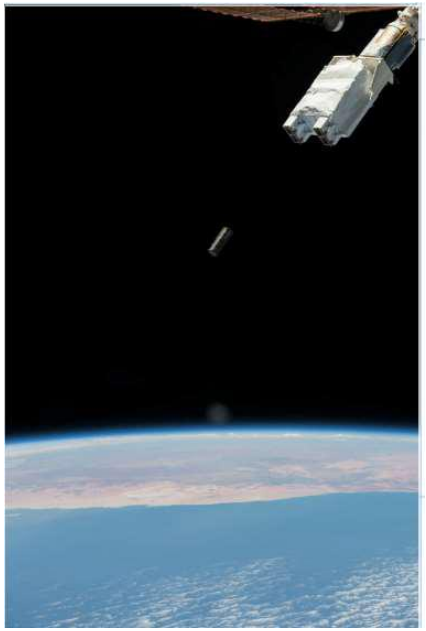
New Launch Solutions

AirLaunch

from a Mothership



From ISS

Small Satellites in the near future

FIGURE 14 COMMERICAL SEGMENT WILL DRIVE THE SMALL SATELLITE MARKET DURING THE FORECAST PERIOD

	2015	2016	2021
Commercial	1022.1799	1219.376502	2946.172463
Defense	217.82942	262.403086	662.3302125
Civil	620.19068	734.4626916	1711.41871

Source: Annual Reports, Secondary Research, and MarketsandMarkets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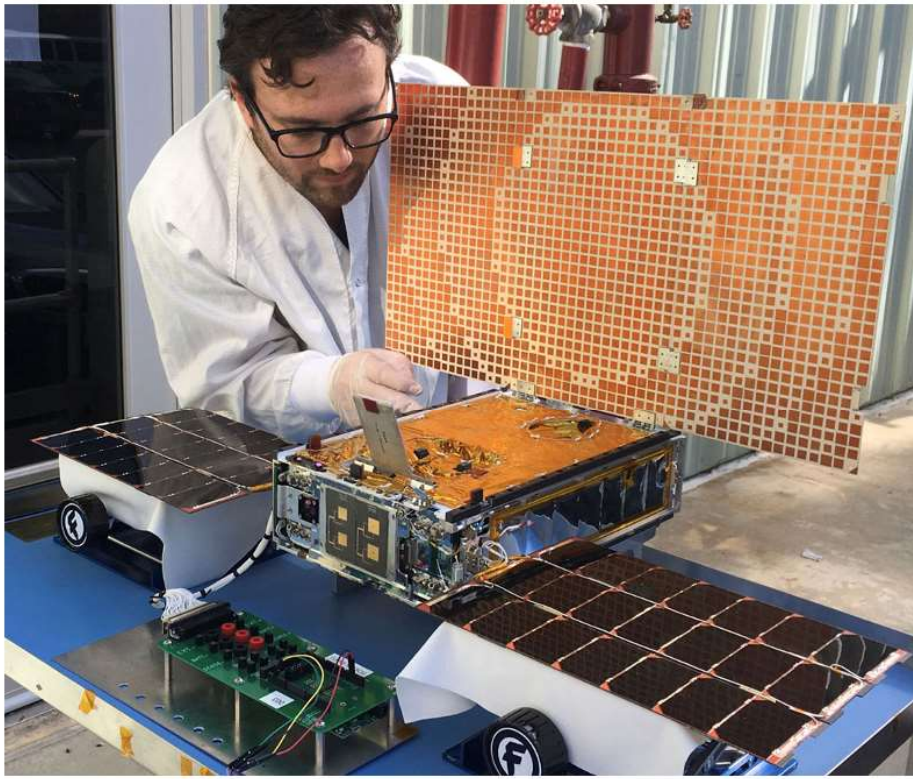
Future???

Spacecraft Applications

MarCO
Mars Cube One

- Two 6U CubeSat
- Mass 13.5 Kg
- First (and second) CubeSat to flown in Deep Space
- designed to monitor InSight for a short period around landing
- P/L softball-sized radio that provides both UHF (receive only) and X-band (receive and transmit) functions capable of immediately relaying information received over UHF
- Launched 5 May 2018



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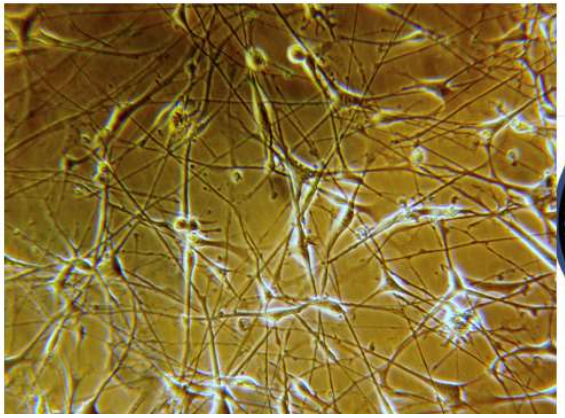
Spacecraft Applications

Humanitarian purposes

- support in case of emergency

CubeSat for biomedical research

- Cancer research
- Osteoporosis
- Neurodegenerative diseases
- Development of new drugs
- Development of new treatments

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Where is the
limit?

Future Generations

New applications

- limited by their imaginations

Success

- Limited by their knowledge/preparation

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Educate, Play, Have fun….

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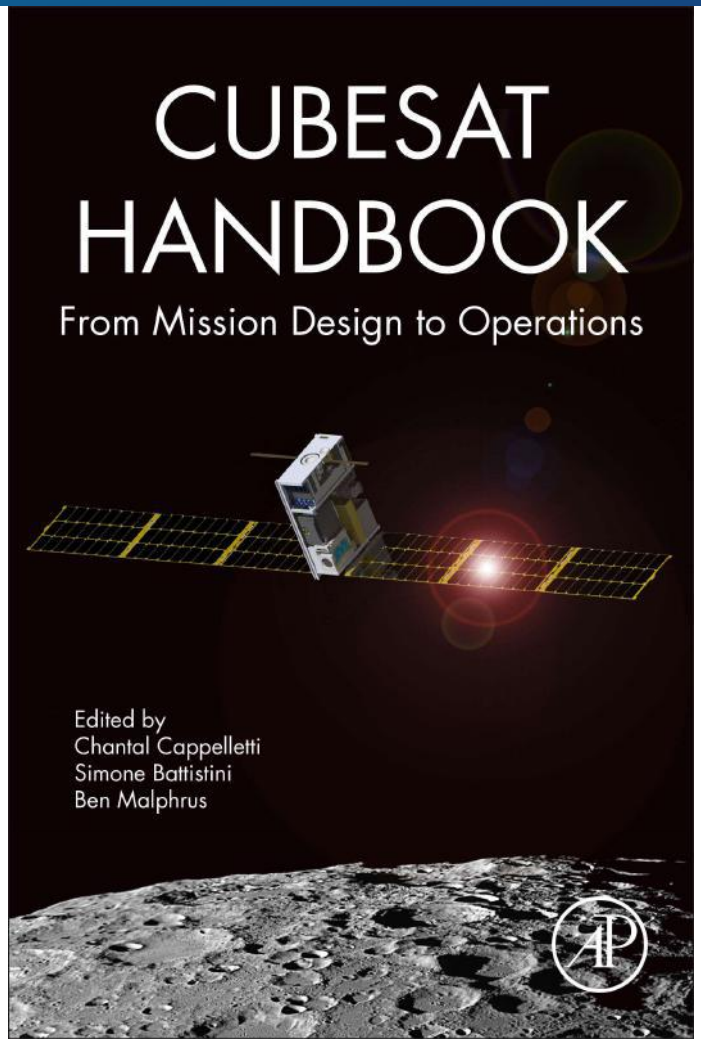
CubeSat Handbook



June 2020

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Thank You!!!