



**Group 7: Small satellites  
launch systems and  
services: needs,  
availability, development  
trends**

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# The "New Space" business - a few examples of recent ventures from non-governmental players



**Audi's quattro Moon Rover 2015**



**Astrobotic's Moon Lander project 2017**



**Private air launch projects**

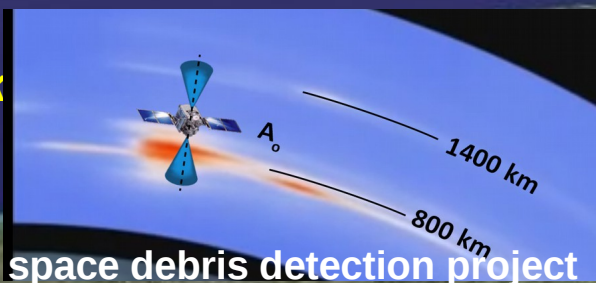


**Planet Labs EO 2013**

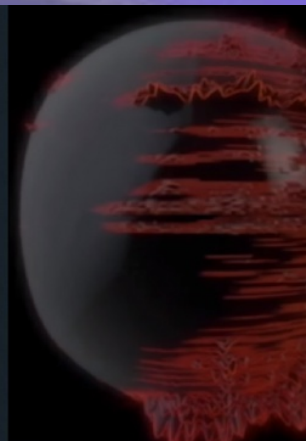


**„Croatia and "Swiss Space systems are to build a space port", 2015 (Croatia is a 4 Million people EU country)**

**„Rise in space junk could provoke armed conflict“, 2016**



**space debris detection project by SSTL and CASTRA**



**„Luxembourg, serious about mining asteroids, seeks investors“, 2017**



**#Laugh -- a 3D sculpture fabricated from a sound simulation of crowd-sourced laughter, to be set in space, Eyal Gever & NASA 2016**

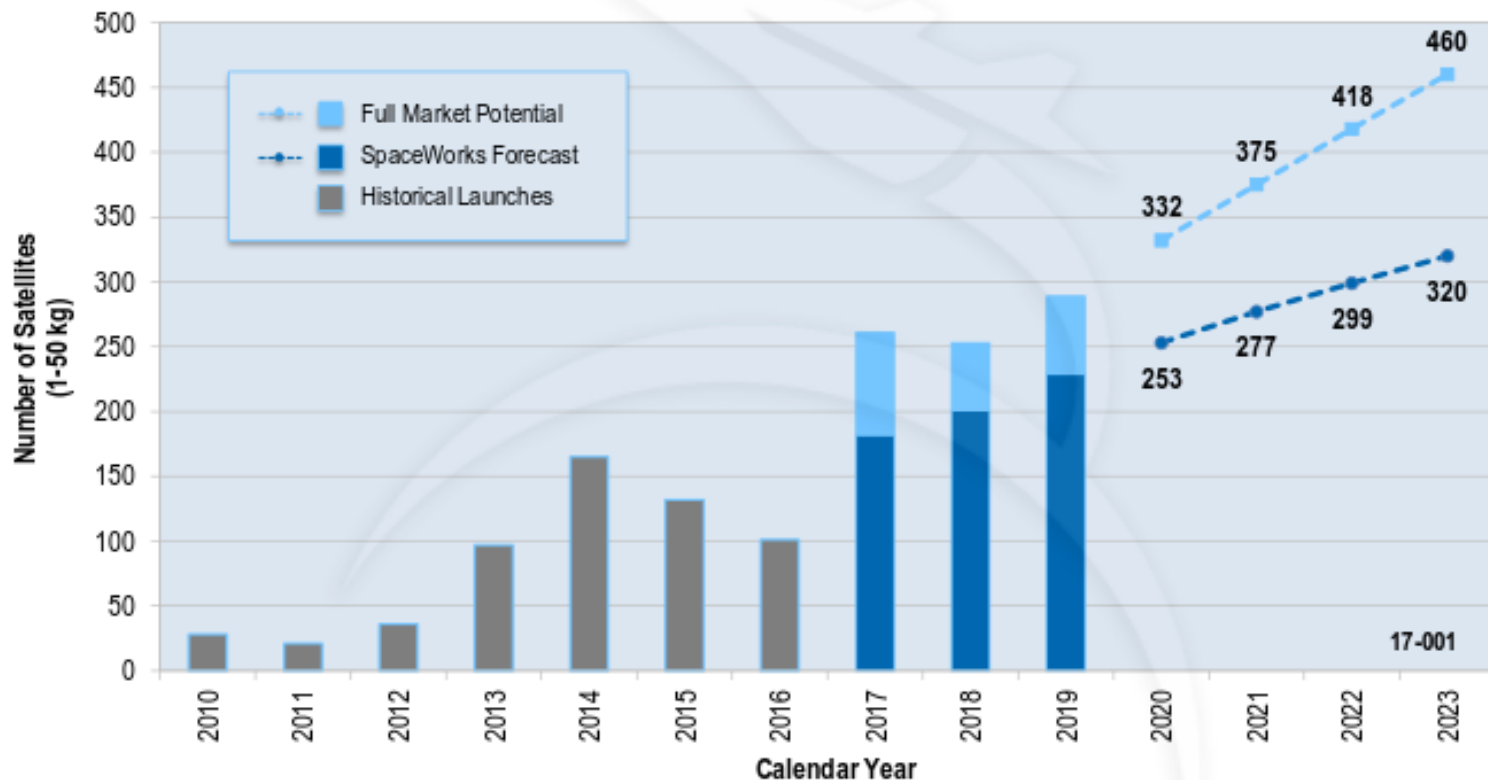


# NANO AND MICROSATELLITE MARKET SIZE, BY APPLICATIONS, 2014-2019 (\$MILLION)

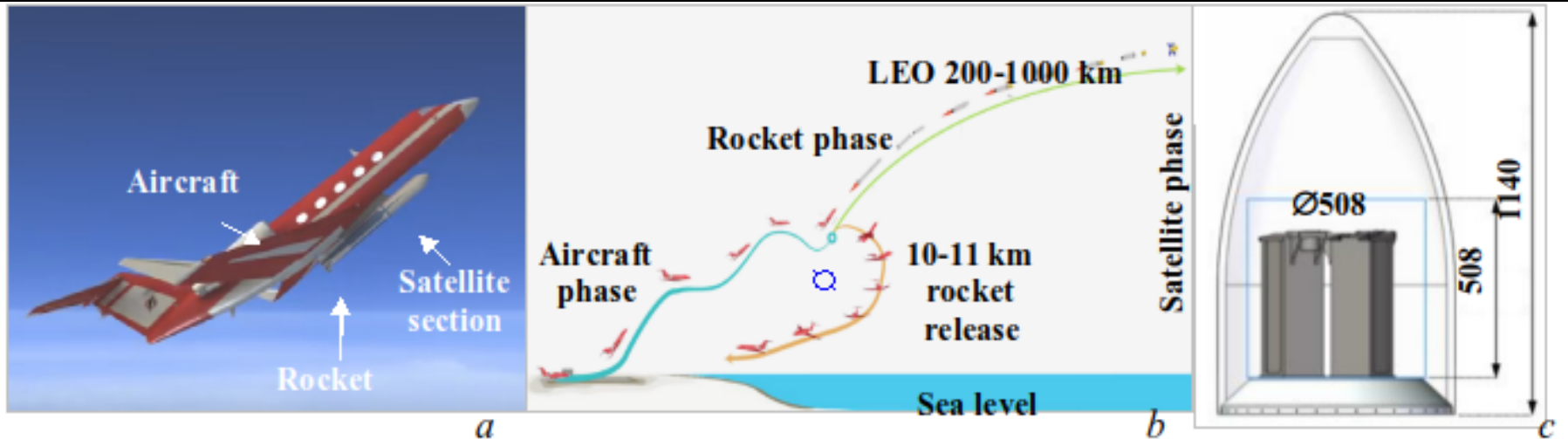
Application	2014	2015	2016	2017	2018	2019	CAGR
							(2014-2019)
Communication	100.2	127.7	155.5	177.8	193.8	206.8	15.6%
Earth Observation and Remote Sensing	81.1	132.3	206.6	301.5	422.7	555.8	47.0%
Scientific Research	202.7	261.0	323.3	379.2	425.2	455.2	17.6%
Biological Experiments	27.3	40.9	55.5	69.2	76.7	84.1	25.2%
Technology demonstration and verification	228.6	274.8	320.5	357.0	384.0	402.3	12.0%
Academic Training	31.9	44.8	60.7	78.5	96.1	106.1	27.2%
Reconnaissance	30.7	39.2	48.5	58.8	68.9	76.9	20.2%
Total	702.4	920.8	1170.7	1421.9	1667.4	1887.1	21.9%

## 2017 Nano/Microsatellite Launch History and Forecast (1 - 50 kg)

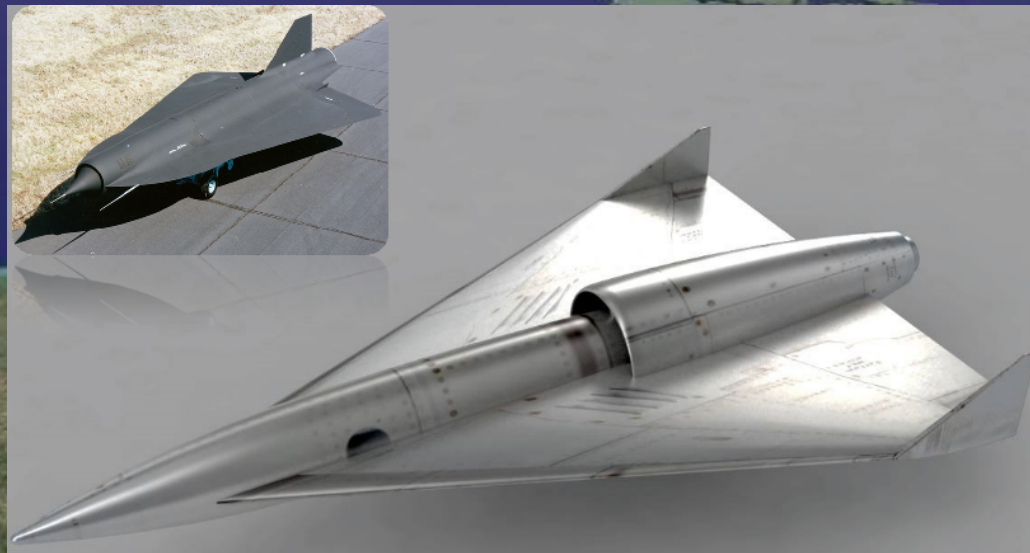
Projections based on announced and future plans of developers and programs indicate nearly 2,400 nano/microsatellites will require a launch from 2017 through 2023



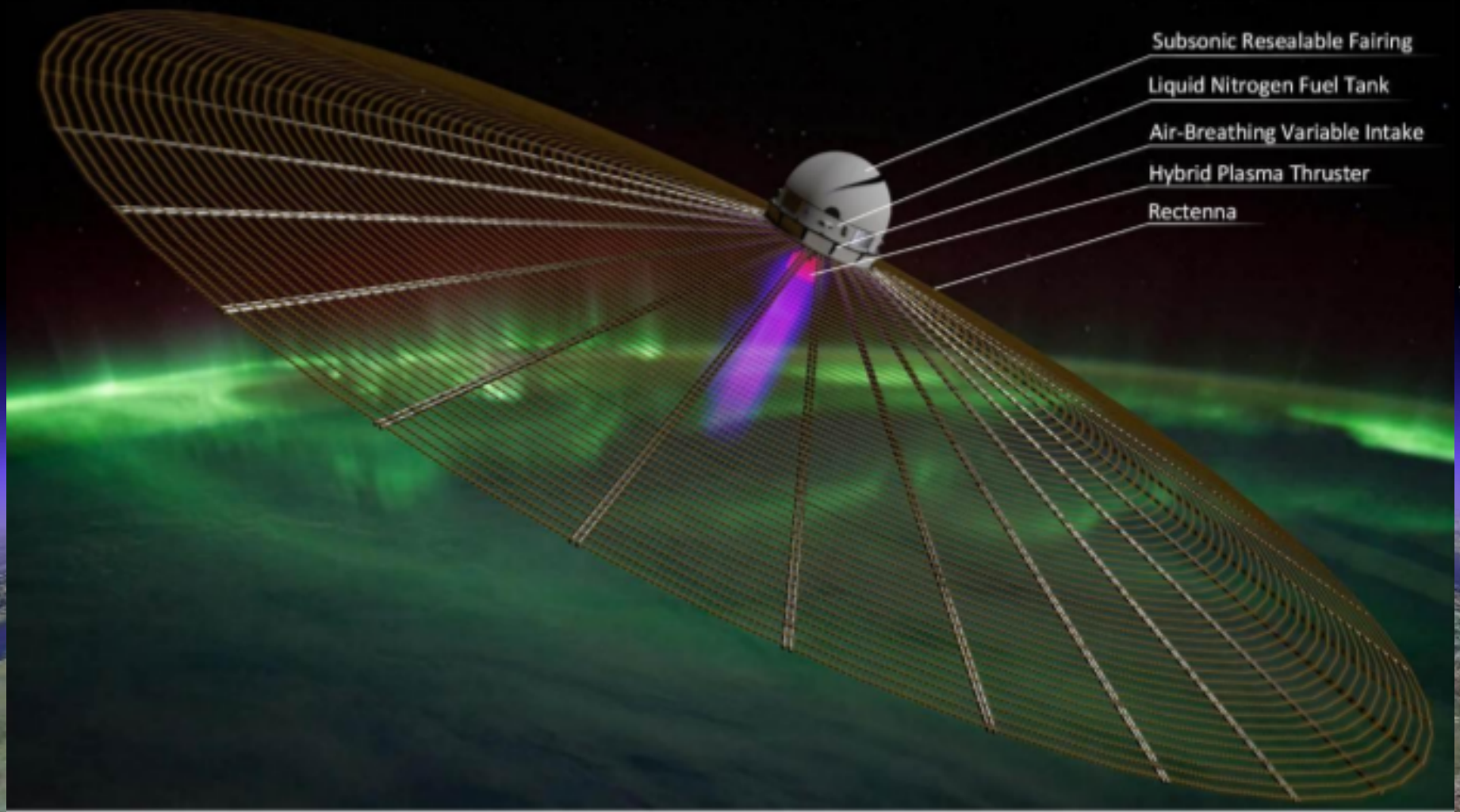
“Launch delays continued to reduce market potential and added to a growing backlog of satellites awaiting launch. Over 100 small satellites were impacted by 2016 launch delays. SpaceX’s Falcon 9 family delivered zero small satellites in 2016”, [SpaceWorks Enterprises Inc.](#)



**Fig 1 a) GO Launcher 2 Project [3]; b) Schematic trajectories; c) 45-kg payload in the rocket head**







**Key elements of the MicroLaunch Vehicle,  
Thales Alenia Space UK Ltd**



The EU Framework Programme  
for Research and Innovation

# HORIZON 2020



**H2020 Programme**

**Rules of Contest**

*for the European Low-Cost Space Launch Prize*



# **OBJECTIVES of the discussion**

- **Bring together people interested in new launcher systems**
- **Discuss the experience and needs for micro-nano-pico satellite launch services**
- **Outline a list of existing cube-sat launch service providers and share experience**
- **Form a possible network of people interested in launch system studies and development using state-of-the art technologies**
- **Discuss possible interest and capacity to cooperate towards the EU H2020 small launcher program prize competition**



**A journey of a thousand miles  
begins with a single step**

**千里之行，始於足下**

**Laozi**

**(qiānlǐ zhī xíng, shǐ yú zúxià)**



***LET US DO IT TOGETHER !***

# **OUTCOME of the discussion**

- **Participated: representatives of Argentina, Bulgaria, Costa Rica, Denmark, Italy, Lithuania, USA**
- **All agreed and shared opinion that having dedicated small satellite launcher systems is to be of high value and importance to the small-sat community, including commercialization**
- **There is a number of small sat launcher developments in different countries , still there is yet no much of actual service offering (TRL to low still)**
- **Among the most important needs for SSL are : time to flight, custom orbit selection, cost**



# **OUTCOME of the discussion-2**

## **Next steps:**

- **exchange additional information on the development status of the SSL initiatives worldwide and the possibilities to do some further feasibility studies on the topic, and even form a consortia for participation in the H2020 prize initiative**
- **create an informal network ( e.g. on LinkedIn) to further collaborate and network on the topic, with the goal to establish a more long term interaction within the UNISEC framework**

**Anyone interested is welcome !**