

# COE CST Tenth Annual Technical Meeting

## Small Launch/Satellite Constellation Industry Dynamics (395/402 FIT)

**Andy Aldrin Ph.D.**  
**Cory Sanicky**  
**Matt Austin**  
**Stephen Sullivan**  
**Victor Bautista**



Center of Excellence for  
Commercial Space Transportation



# Team Members

- PI: **Andy Aldrin**
- Students: **Cory Sanicky**  
**Matt Austin**  
**Stephen Sullivan**  
**Victor Bautista**



- Organizations



# Task Description

- **Develop event databases comparable and consistent with relevant process research in other industries**
- **Convene methodological and market specific workshops to refine methodology and develop hypotheses/assumptions**
- **Develop economic/business analyses to support hypothesis/assumption development**
- **Develop analyses regarding critical assumptions**
- **Author and submit manuscripts for journal publication**

# Schedule Milestones

- April 2019: (Prewrite) Small Launch Vehicle Industry Dynamics Workshop
- August 2019-February 2020: Prewrite by PI and Students
- February 2020: Notification of award
- July 2020 Completion of SLV market analysis
- September 2020 combination of Small Launch Vehicle and Satellite Constellation studies
- December 2020: Process workshop 1 (Virtual)
- February 2021: Industry Workshop 1 (Launch)
- March 2021: Industry workshop 2 (Satellite)
- April 2021: Industry workshop 3 (Combined)
- June 2021: Process workshop 2
- September 2021: Combined workshop
- December 2021: Manuscript submittals

# Goals

- **Develop early indicators regarding the future shape and viability of the largest and most volatile sectors of the space industry**
- **The database developed through the course of this project will provide valuable source of future industry research**

# Results

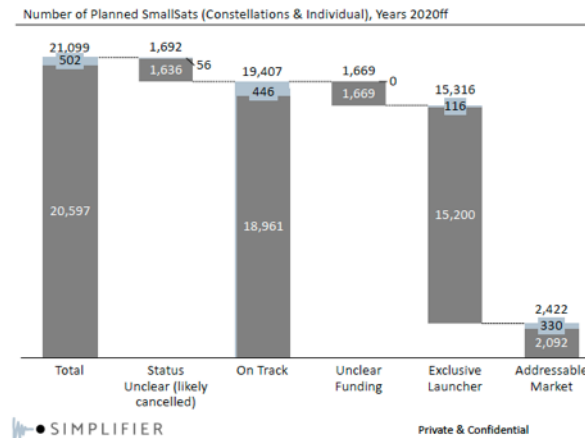
- Launch systems analyzed (Austin, Sullivan, Bautista)
- ~700 Event records catalogued (Sanicky)
- Small launch market analysis
  - Produced with Simplifier (Peter Eckart, Andy Aldrin)
  - Indicates with nominal assumptions, serviceable market will support 3 providers

The screenshot shows a data entry interface for a news article. The form includes fields for:
 

- Headline:** PLD Space Closes €7 Million Investment in Tie-up with Arcano Partners
- Company Name:** PLD Space
- Date of Publication:** 9/15/2020
- Author:** Doug Messier
- Launch Vehicle:** Miura 5
- Date of Event:** 9/15/2020
- Article Link:** http://www.parabolicarc.com/2020/09/15/pld-space-closes-7-million-investment-in-tie-up-with-
- Category:** Launch
- Country:** Spain
- Outcomes:** Funding Received
- Event/Incident:** Event
- Event Description:** PLD Space today announced alternative asset management group Arcano Partners. The €7 million [\$8.3 million]
- Article Text:** Spain's PLD Space, Miura 5 microlauncher (formerly Arion 2) aims to provide dedicated launches for an emerging small satellites market in 2021. (Credit: PLD Space) Venture part of tech firm's Series B investment round for space vehicle development PLD Space already attracted over €1.8 million [\$21.3 million] in private investment and institutional support in addition to new deal involving Arcano Partners a leading financial advisor in Iberian market. ELCHE, Spain, 15 September 2020 (PLD Space) — Spanish reusable launch vehicle developer PLD Space today announced the closure of further financing through a tie-up with independent financial advisory and alternative asset management group Arcano Partners. The €7 million [\$8.3 million] venture will fund the build out of the PLD Space aerospace project in a deal forming part of its Series B investment round.
- Article Citation:** Messier, Doug. PLD Space Closes €7 Million Investment in Tie-up with Arcano Partners - Parabolic Arc. 15 Sept. 2020. http://www.parabolicarc.com/2020/09/15/pld-

 The form also includes buttons for 'Save Record', 'Add Record', 'Duplicate Record', 'Next Record', and 'Previous Record'.

While ~2,000 SmallSats to be launched on average p.a. throughout 2020's, average Addressable Market for SmallSat Launchers is ~250 SmallSats p.a.



- #Individual SmallSats: 330
- Assumption: 5-year horizon
- Average addressable market of ~50 Individual SmallSats p.a.
- #Constellation SmallSats: 2,092
- Assumption: 10-year horizon
- Average addressable market of ~200 Constellation SmallSats p.a.
- Total #SmallSats: 2,422
- Average addressable market of ~250 SmallSats p.a.

• SIMPLIFIER

Private & Confidential

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# Publications, Presentations, Awards, & Recognitions

## PUBLICATIONS

## PRESENTATIONS

Preliminary Small Launch Vehicle Market Assessment (Eckart, Aldrin)

## AWARDS

## RECOGNITIONS

Please include publications, presentations, awards, and recognitions you have received for the past year. This information is critical for the annual report. Also, please copy the original files to [fredbowen@orionat.com](mailto:fredbowen@orionat.com). For questions contact Fred Bowen at 614-267-9787.

# Conclusions and Future Work

- Integration of two studies will yield more actionable conclusions
- Get started with workshops in earnest.