



# Masten

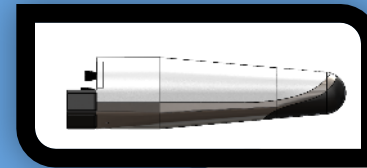
ROCKET TECHNOLOGY INNOVATORS

## Landers, Testbeds, and Vertical Landing Technologies

June 2016

# Technology and Vehicle Pipeline

## Launch Focus



Orbital  
Technologies

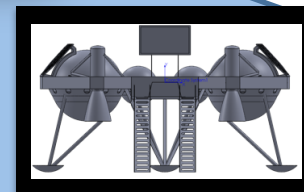


Core Technologies

- Propulsion
- GNC
- Vehicle
- Operations



Lander  
Technologies



## Landing Focus



**COMMERCIALY-DESIGNED,**  
**-BUILT & -OPERATED**  
**LANDER TESTBED VEHICLES**

- **Shared architecture**



**XA-0.1-B-1**  
**"Xombie"**



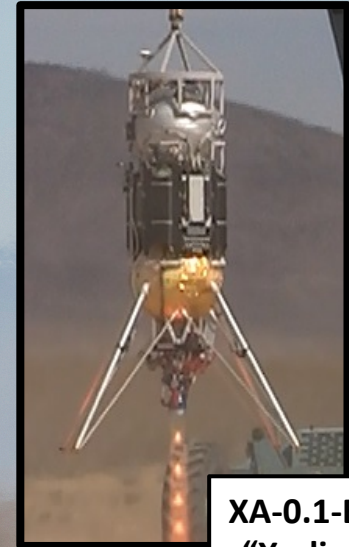
**XA-0.1-E-1**  
**"Xoie"**



**XA-0.1-E-2**  
**"XaeroA"**

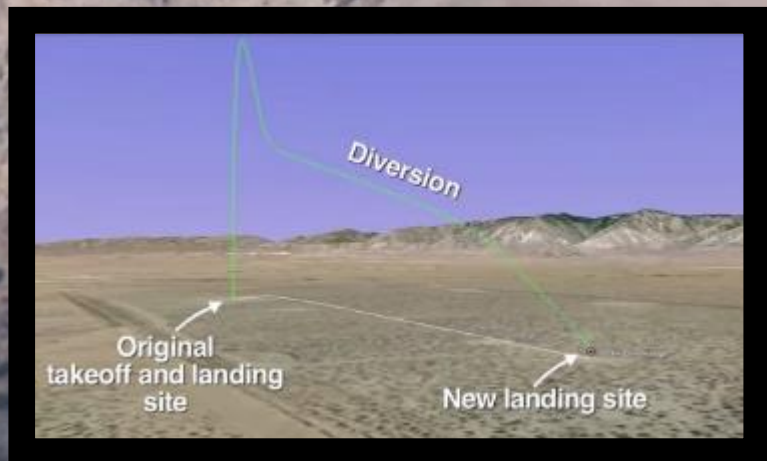


**XA-0.1-E-4**  
**"XaeroB"**



**XA-0.1-E-5**  
**"Xodiac"**





- Award winning GN&C
- Propulsion expertise
  - Reusable, restartable engines with hundreds of fires
  - LOX/IPA, LOX/Methane, HTP, etc
- Pressure tanks, structure, aero
- Full vehicle systems development
- Over 450 flights across our vehicles
  
- Precisely controlled flight profiles
- Cross- and down-range divert maneuvers
- Precise soft landing
- Robust, reliable turn-around
- Aircraft-like reusability “safety pilot” supervision of hosted payloads

## Some of our customers:

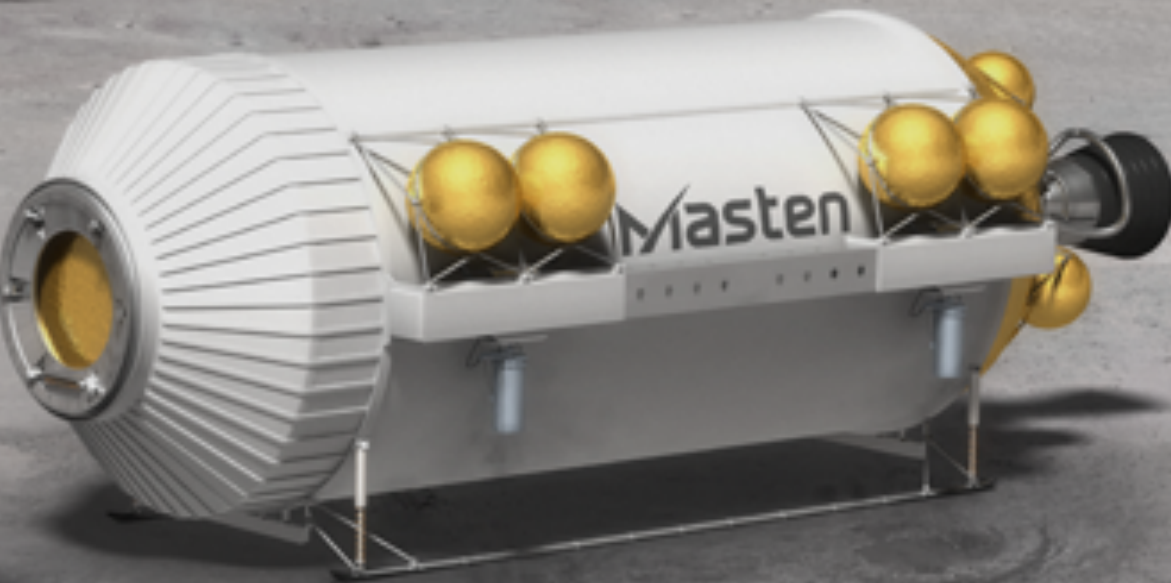
- NASA Flight Opportunities Program
- JPL
  - ADAPT
  - GFOLD
  - LVS
- NASA AES
  - Lunar CATALYST
  - COBALT
    - Navigation Doppler Lidar + Lander Vision System = Terrain Relative Navigation
- Charles Stark Draper Laboratory
- Carnegie Mellon University
- Astrobotic Technologies
- Mojave Air and Spaceport
- University of Colorado (Boulder)
- Aerospace Corporation
- ULA
- DARPA XS-1 Orbital Launch Vehicle

**Masten**  
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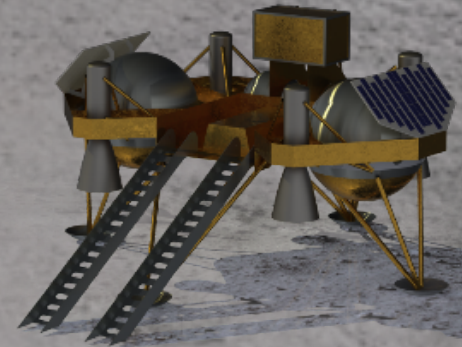




**XEUS**  
**Centaur or Aces Mission Kit**  
**15 tons to Lunar Surface**  
**Heavy Lift to Mars**



**XL-1**  
**Lunar CATALYST Program**  
**100kg to Lunar Surface**  
**Unique green storeable**



# Masten

ROCKET TECHNOLOGY INNOVATORS



Dozens of videos featuring Masten flight and engine tests are available on our YouTube channel:

<https://www.youtube.com/user/mastenspace>

Contact: [jscotkin@masten.aero](mailto:jscotkin@masten.aero)