**A SEQUENCE FOR FUTURE LUNAR LANDINGS TO ENHANCE SCIENTIFIC RETURNS.** J. Mehta[1], A. Kothandhapani[1], V. Vatsal[1], J. Head[2], U. Shah[3], [1]TeamIndus - Axiom Research Labs, Bangalore, Karnataka, 560092, India. [2]Department of Earth, Environmental and Planetary Sciences, Brown University, Providence RI 02912, USA, [3]OrbitBeyond Inc. Edison, NJ 08837. USA. (jatan.mehta@teamindus.in)

**Introduction:** A lunar science community consensus for many high scientific value lunar landing sites was a product of the Lunar Science for Landed Missions Workshop (NASA Ames, January 2018).[1] The authors of this paper, a mix of research engineers at commercial space companies and scientists , present an addendum, addressing the engineering capabilities required to meet the scientific goals at each site.

The emerging capabilities of commercial entities developing lunar landing and exploration systems will act both as a constraint and an enabler. The intention of this study is to (1) identify the capability requirements to meet the scientific objectives (2) illustrate how capabilities hence developed can be harnessed to enhance scientific returns.

**Landing Sites:** The reference landing sites[1] to assess engineering requirements are as follows:

| *Nearside* | |
|---|---|
| Aristarchus plateau | 50 W, 25 N |
| Gruithuisen Domes | 40.5 W, 36.6 N |
| Ina | 5.3 E, 18.66 N |
| Marius Hills | 56 W, 14 N |
| Pits in Mare Tranquillitatis | 33.2 E, 8.3 N |
| Reiner Gamma | 59 W, 7.5 N |
| *Farside* | |
| Compton-Belkovich Volcanic Complex | 99.5 E, 61.1 N |
| Moscoviense | 147 E, 26 N |
| South-Pole Aitken Basin | 170 W, 53 S |
| Antoniadi crater | 172 W, 69.7 S |
| Shackleton plateau/ridge | 125 E, 88 S |

**Conclusion:** The output from the Workshop at Ames presented a high-level requirements matrix for each landing site. We have extended this to outline the engineering considerations and developed a notional sequence in which the landing sites may be targeted. This enables a campaign of scientific missions driven by technologies currently within reach of, and planned by commercial spaceflight companies. Understanding the technology progression that such a sequence demands from developers of commercial lunar landing and mobility systems will aid science planners and agency programs in maximizing scientific returns.