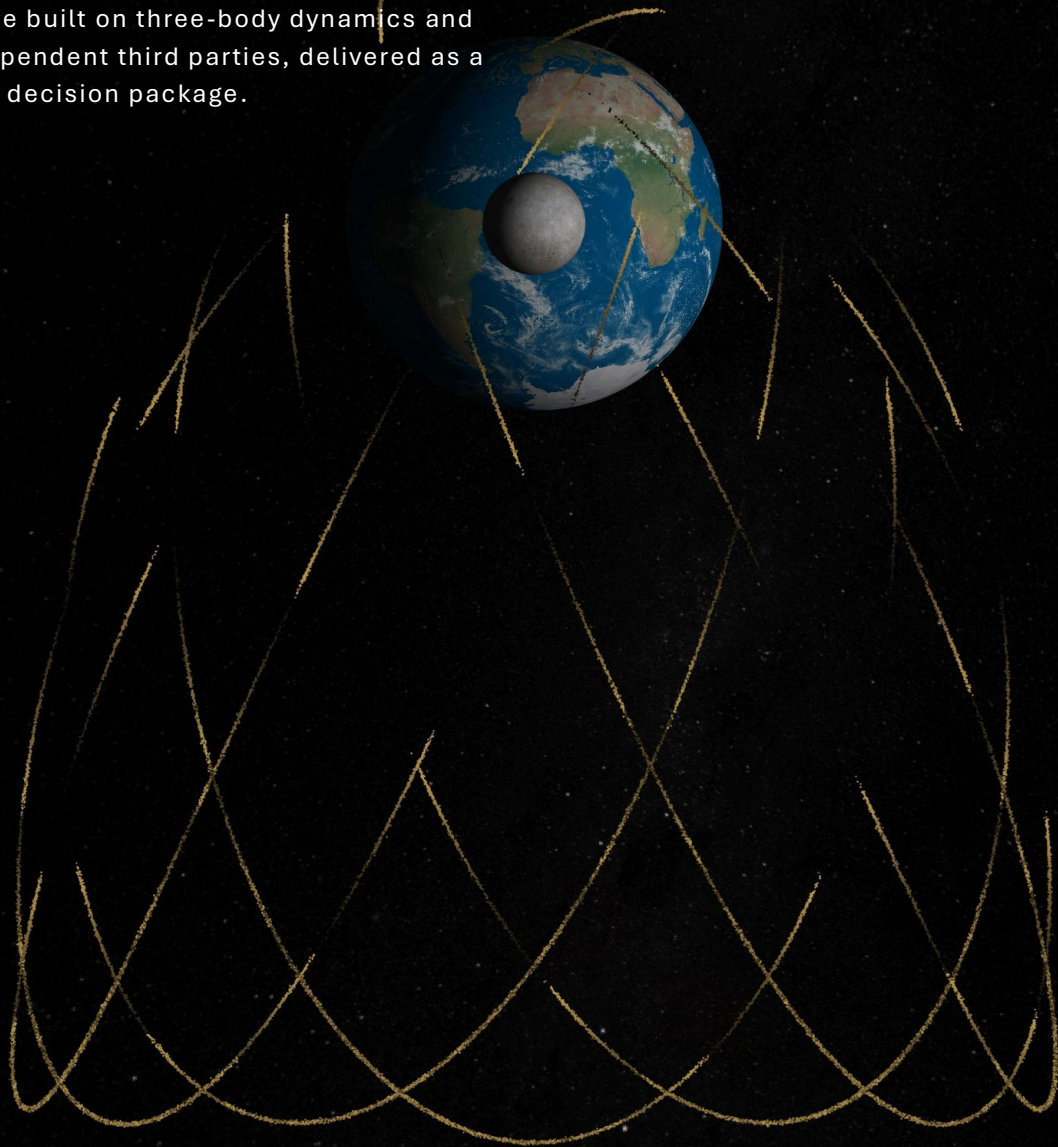


— CISELUNAR DECISION SUPPORT

# Chart the path before you **commit** the capital.

Award winning engineering and analysis for cislunar missions; purpose built on three-body dynamics and validated by independent third parties, delivered as a leadership-ready decision package.

**RAPID****Weeks, not quarters**

Decision-ready findings on a fixed timeline, scoped at kickoff.

**INDEPENDENT****Objective evidence**

Third-party validated methods, outside your internal analysis chain.

**ACTIONABLE****Built for leadership**

Executive briefings backed by a traceable technical record.



## THE DECISION CHALLENGE

# Better architecture decisions, earlier.

*Cislunar programs face consequential choices before requirements, concepts, and internal analysis workflows are mature.*

We provide an independent, quick-turn analysis layer to help program teams screen alternatives, test assumptions, identify technical risks, and focus their internal resources on more promising paths.

## INDEPENDENTLY VALIDATED

### ✓ a.i. Solutions

Tulip-shaped orbit families independently reproduced in FreeFlyer, confirming our own trajectory results.

### ✓ Peer-Reviewed Replication

Findings reproduced by separate research groups across the world and published in Springer's Nonlinear Dynamics Journal.

### ✓ Institutional Interest

Research cited or reviewed by teams connected to R1 universities, NASA, NRO, USSF, and LunaNet programs.

## SELECTED TECHNICAL WORK

Our recently published cislunar research provides architecture-level insight and operational depth.

### LUNAR PNT & EARTH RELAY

#### Tulip-Shaped Orbits for Lunar South Pole PNT & Direct-to-Earth Relay Missions

Five- and six-satellite architectures were evaluated against NASA LunaNet Performance Metrics.

2026 PrePrint • [ARXIV:2607.10482](#)

**Result:** 18 hrs/day EVA at worst-case south-polar points, vs. ~12.3 hrs for equivalent ELFO designs.

### OPERATIONAL VIABILITY

#### Station-Keeping Techniques for Sidereal Resonant Tulip-Shaped Three-Body Orbits

High-fidelity analysis demonstrates multi-year station-keeping performance.

[AIAA SCITECH 2026](#) • [AIAA 2026-1455](#)

**Result:** Annual station-keeping  $\Delta V$  below 15 m/s, sustained across the multi-year simulation window.

## MISSION OUTCOMES

### ✓ Reduce program risk

Expose performance, supportability, and operational constraints early.

### ✓ Accelerate technical decisions

Produce credible evidence without long analysis cycles.

### ✓ Preserve internal authority

Retain ownership of mission requirements and design decisions.

### ✓ Create a defensible record

Document assumptions, methods, trades, and recommendations for review.



# Problems we help programs solve.

*All engagements start with simple questions.*

|                                                                                                                                                         |                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>ARCHITECTURE</b><br><br><i>Which architecture best satisfies our mission objectives?</i>                                                             | <b>ACCESS &amp; COVERAGE</b><br><br><i>Where do coverage gaps occur, and what changes improve performance?</i>            |
| <b>POSITIONING, NAVIGATION, &amp; TIMING (PNT)</b><br><br><i>How does GDOP, service outages, and asset placement impact our navigation performance?</i> | <b>SPACE RELAY &amp; CONTACT</b><br><br><i>Can the proposed ground and relay network support our mission thread?</i>      |
| <b>OPERATIONS</b><br><br><i>What phasing, station-keeping, or contact-planning burdens accompany each option?</i>                                       | <b>RESILIENCE</b><br><br><i>What happens if an asset is removed, delayed, rephased, or constrained?</i>                   |
| <b>COST &amp; COMPLEXITY</b><br><br><i>Can this architecture be simplified without undermining mission performance?</i>                                 | <b>TECHNICAL DUE DILIGENCE</b><br><br><i>Are the assumptions, claims, and predicted performance technically credible?</i> |



## WHAT YOU'LL RECEIVE

# Built for both leadership and engineering.

*Every engagement produces a decision package supported by technical data ...*

|                                                                                                              |                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Executive briefing</b><br>Decision context, key findings, risks, and recommended next actions.            | <b>Technical memorandum</b><br>Methods, assumptions, inputs, results, limitations, and conclusions.                       |
| <b>Architecture trades</b><br>Consistent comparison of candidates across agreed evaluation criteria.         | <b>Technical performance metrics</b><br>Coverage, access, contact, geometry, outage, trajectory, or supportability views. |
| <b>Assumptions register</b><br>A clear record of customer input, analytical assumptions, and open questions. | <b>Technical artifacts</b><br>Supporting calculations and artifacts appropriate to the agreed scope.                      |

*and answers four fundamental questions.*

|                                                                                               |                                                                                            |                                                                            |                                                                                  |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>1</b><br><b>What was assumed?</b><br>Inputs, constraints, fidelity, and decision criteria. | <b>2</b><br><b>What was analyzed?</b><br>Candidate options and relevant technical metrics. | <b>3</b><br><b>What was found?</b><br>Performance, sensitivity, and risks. | <b>4</b><br><b>What to do next?</b><br>Clear recommendations for a path forward. |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------|



## WHY COORBITAL

# Specialized cislunar expertise, structured for acquisition.

*Deep technical work for government and commercial customer engagements ...*

## KEY DIFFERENTIATORS

### Deep Cislunar focus

Specialized analysis from lunar PNT, relay, access, coverage, orbit families, to operational supportability.

### Independent perspective

Objective technical assessments without displacing the customer's mission-design authority.

### Analysis and modeling capabilities

Leadership-ready outputs designed to support near-term decisions.

### Professional tooling

Reusable internal workflows compatible with our **pumpkyn / pumpkynPIE** ecosystem.

### Flexible engagement

Fixed-price sprints, recurring support, and separately scoped licensing or integration paths.

## BUSINESS CREDENTIALS

### Space Enterprise Consortium Member

Member of the NSTXL-managed SpEC OTA ecosystem, with access to opportunities, teaming pathways, and industry collaboration.

### SBA EDWOSB / WOSB Certified

Eligible for EDWOSB and WOSB federal set-aside opportunities under the SBA Women-Owned Small Business Federal Contract Program.

### Joint Certification Program

Approved DD Form 2345 supporting authorized access to unclassified, militarily critical, export-controlled technical data.

### Federal Contract Ready

Active SAM registration UEI: QAFGPTU2N227 CAGE code: 9UTU2

## A PATH OF DISCIPLINE

*begins with a question and ends with a decision.*

| Frame                                                                                    | Analyze                                                                               | Review                                                                                            | Decide                                                                                  |
|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Confirm the decision, candidate options, inputs, constraints, metrics, and deliverables. | Execute the agreed modeling, simulation, SME analysis, and comparative trade studies. | Walk through preliminary results, sensitivities, limitations, assumptions, and customer feedback. | Deliver the final briefing, technical package, artifacts, and recommended next actions. |



## HOW WE ENGAGE

## ENGAGEMENT ASSUMPTIONS

*Clear boundaries from kickoff to delivery.*

- At kickoff, we agree on the options to evaluate, available inputs, level of analysis, deliverables, and review schedule. That agreed scope forms the basis of the fixed price.
- Your mission data, assumptions, schedules, and confidential materials remain under your control.
- Work is performed using secure data-sharing methods approved by both teams.
- Our engagements support architecture decisions and early trade-space evaluation. Flight certification, operations, and other safety-critical products require a separate scope.

## DATA RIGHTS AND INTELLECTUAL PROPERTY

*Useful deliverables. Protected foundations.*

### CUSTOMERS

Can use, reproduce, and share delivered reports, plots, trade matrices, and briefings for mission and program decisions.

### COORBITAL

Retains pre-existing software, tools, workflows, and general-purpose improvements.

## LET'S FRAME YOUR NEXT MISSION DECISION.

*Start with one focused, 30-minute architecture working session.*

### CONTACT

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[REQUEST A WORKING SESSION →](#)

### BRING US A QUESTION

**We'll help bound the path.**

A productive conversation needs a decision that must be made, the candidate options, and available inputs.

