NASA Technology Portfolio Analysis

~20,000 Projects · 97 Programs · 6 Mission Directorates

This analysis was generated using Claude (Anthropic) with live access to NASA's public TechPort database via an MCP server. All data comes from the public TechPort REST API (techport.nasa.gov) and public web sources — no internal or restricted NASA data was used.

The TechPort MCP server is open-source and accessible at:
nasatechport.alexandervandijk.com/mcp
github.com/tobedetermined/techport-mcp

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Portfolio Overview

20,150 projects across 97 programs and 6 mission directorates

20,150	733	19,343	74
Total Projects	Active	Completed	Canceled

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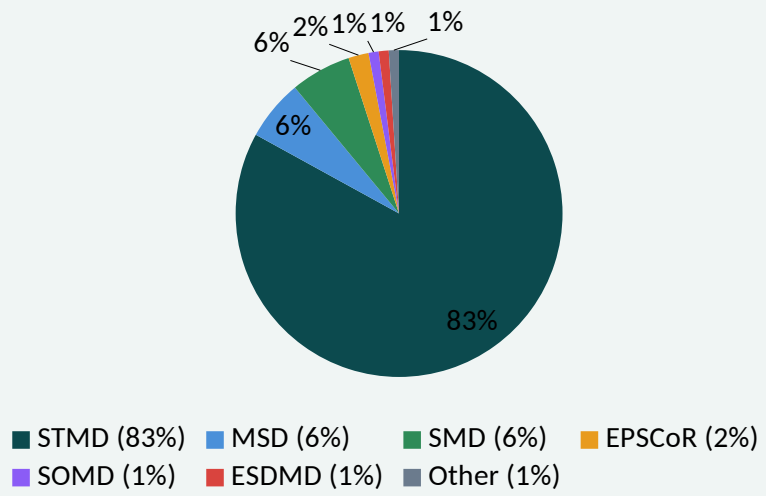

STMD owns 83% of all TechPort projects (16,827)

SBIR/STTR alone = 12,272 projects (61%)

Only 3.6% of projects are currently active

97 programs, but top 3 = 72% of completed work

74 cancellations (0.37%) — extremely low rate

TechPort covers technology development — not operational missions, science, or procurement

Program Organization Tree

97 programs across 6 mission directorates — (active / completed / canceled = total)

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STMD ····· (505 / 16,267 / 55 = 16,827)
├─ Catalyst ····· (353 / 15,386 / 7 = 15,746)
│  ├─ SBIR/STTR ····· (138 / 12,134 / 0 = 12,272)
│  ├─ STRG ····· (195 / 907 / 0 = 1,102)
│  ├─ NIAC ····· (13 / 314 / 0 = 327)
│  ├─ CIF (10 centers) ···· (0 / 1,916 / 6 = 1,922)
│  ├─ ECI ····· (7 / 33 / 0 = 40)
│  └─ PCC ····· (0 / 82 / 1 = 83)
├─ GCD ····· (70 / 378 / 20 = 468)
├─ FO ····· (55 / 353 / 22 = 430)
├─ SST ····· (6 / 105 / 0 = 111)
└─ TDM ····· (21 / 45 / 6 = 72)

ESDMD ····· (53 / 74 / 7 = 134)
├─ Mars Campaign (MCO) ···· (49 / 66 / 7 = 122)
├─ EVA & Surface (EHP) ···· (4 / 1 / 0 = 5)
├─ Exploration Ground ····· (0 / 7 / 0 = 7)
├─ Gateway ····· (0 / 0 / 0 = 0)
├─ HLS ····· (0 / 0 / 0 = 0)
├─ Orion ····· (0 / 0 / 0 = 0)
└─ SLS ····· (0 / 0 / 0 = 0)

SMD ····· (117 / 1,124 / 0 = 1,241)
├─ Astrophysics (APD) ····· (44 / 345 / 0 = 389)
│  ├─ APRA ····· (30 / 216 / 0 = 246)
│  └─ SAT ····· (10 / 81 / 0 = 91)
├─ Earth Science (ESD) ···· (16 / 358 / 0 = 374)
├─ Planetary Science (PSD) · (40 / 256 / 0 = 296)
│  ├─ PICASSO ····· (21 / 103 / 0 = 124)
│  └─ DALI ····· (13 / 26 / 0 = 39)
├─ Heliophysics (HPD) ····· (11 / 137 / 0 = 148)
└─ Biological & Physical ··· (6 / 21 / 0 = 27)

ARMD ····· (22 / 59 / 1 = 82)
├─ TACP ····· (9 / 32 / 0 = 41)
├─ AOSP ····· (6 / 5 / 0 = 11)
├─ AAVP ····· (5 / 18 / 1 = 24)
└─ IASP ····· (2 / 4 / 0 = 6)

SOMD ····· (11 / 201 / 3 = 215)
├─ HRP ····· (1 / 180 / 3 = 184)
└─ SCaN ····· (10 / 21 / 0 = 31)

MSD (IRAD, 10 centers) ···· (10 / 1,266 / 7 = 1,283)
EPSCoR ····· (15 / 331 / 0 = 346)

TOTAL: 733 + 19,343 + 74 = 20,150
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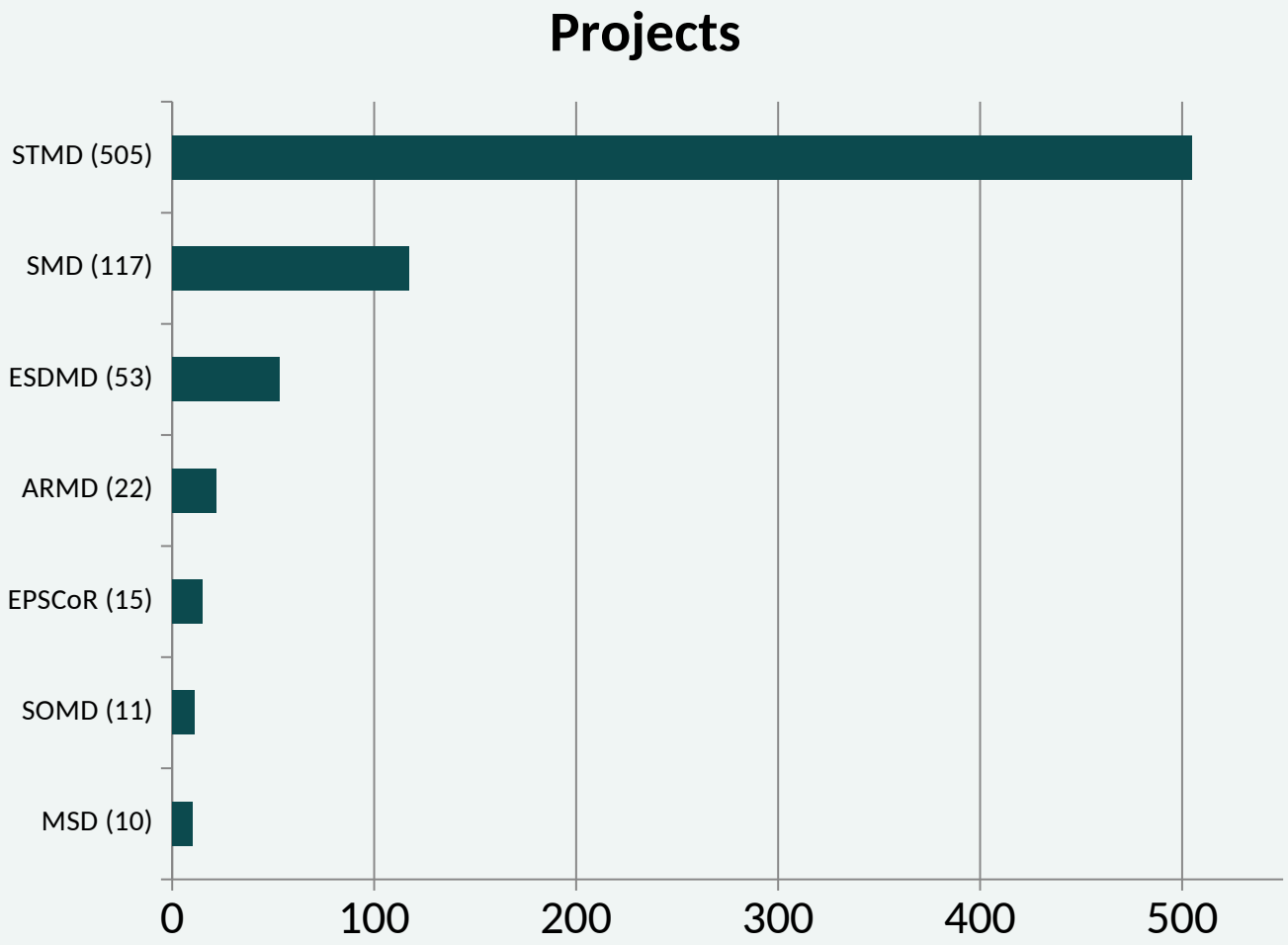
Active Projects by Mission Directorate

733 active projects — STMD owns 69%



STMD — 505 active (69%)
  STRG (195), SBIR/STTR (138), GCD (70)
  FO (55), TDM (21), NIAC (13)

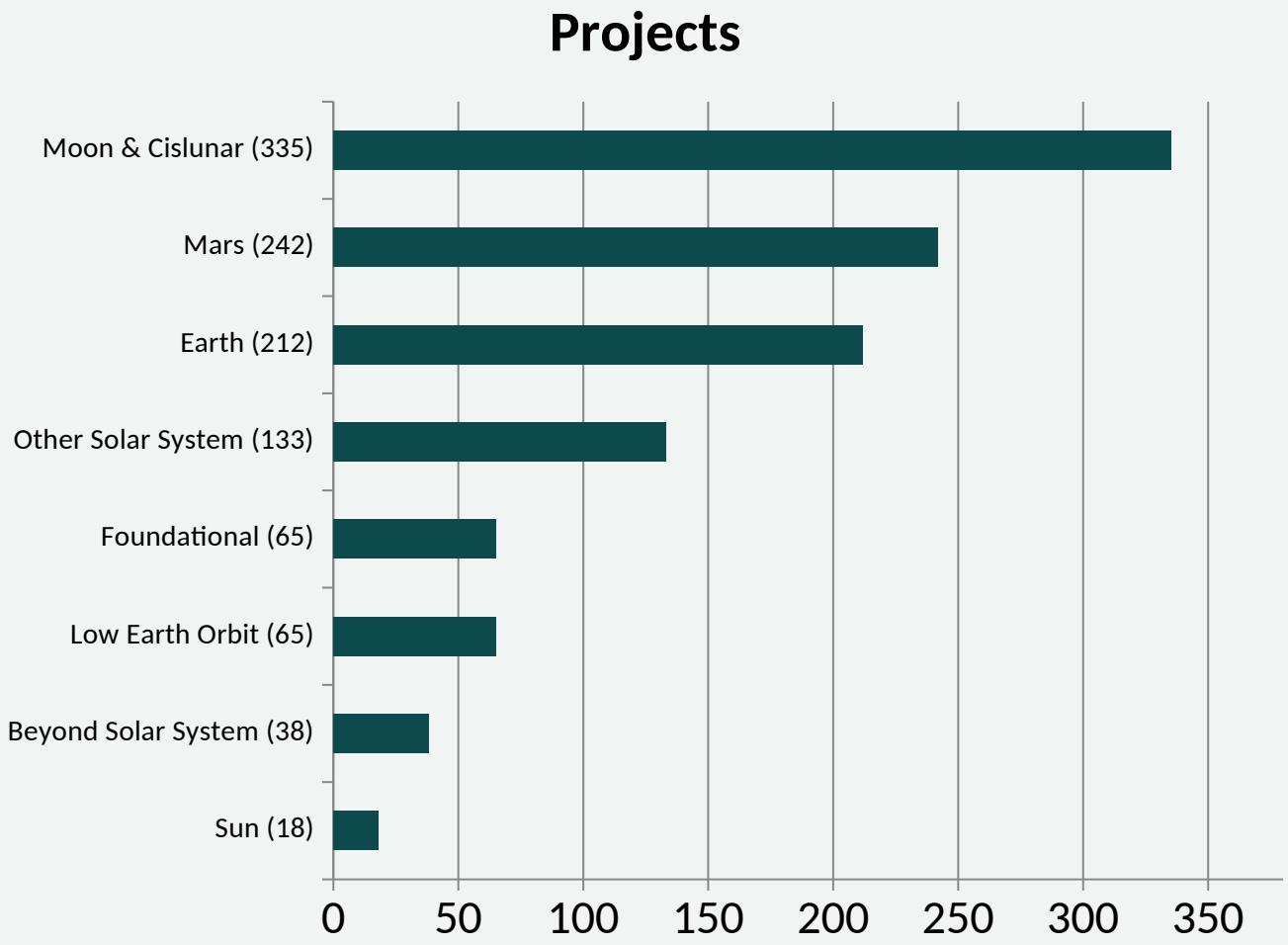
SMD — 117 active (16%)
  Spread across 20 programs in 5 divisions
  APRA (30), PICASSO (21), DALI (13)

ESDMD — 53 active (7%)
  MCO = 92% of ESDMD (49 of 53)
  Gateway, HLS, Orion, SLS = 0 projects
  (platforms, not tech-dev programs)

ARMD — 22 active (3%)
EPSCoR — 15 active (2%)
SOMD — 11 active (2%)
MSD — 10 active (1%)

Where Is NASA Building Technology?

Active project destinations — projects can target multiple destinations



Moon & Cislunar leads at 46%
Mars close behind at 33%
Earth at 29% (instruments + testing)

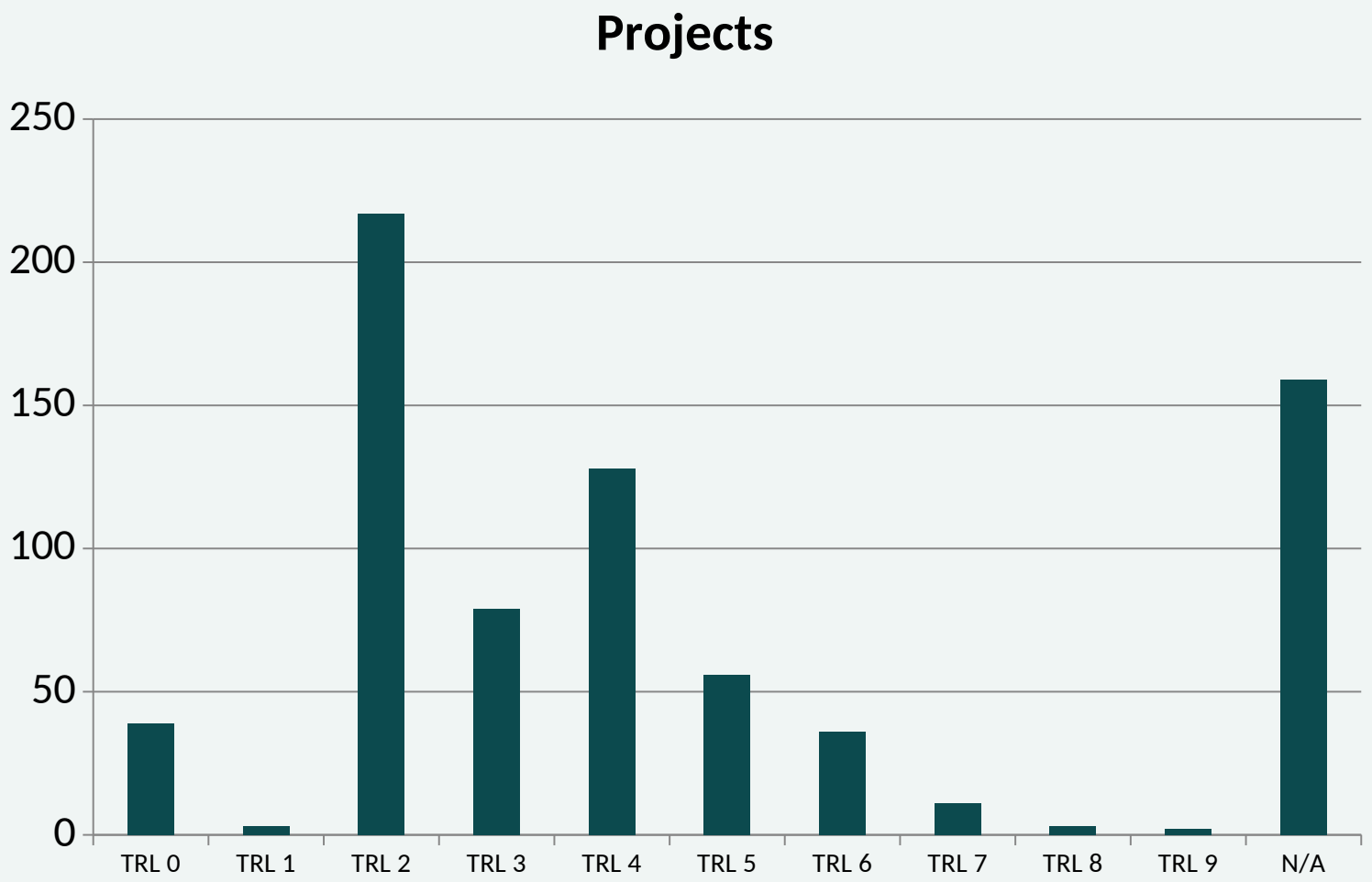
The top 3 destinations account for the vast majority of active work.

Shares exceed 100% because projects can target multiple destinations.

Low Earth Orbit (9%) reflects the ISS transition — commercial LEO stations are being developed but most tech work targets the Moon.

Technology Maturity: TRL Distribution

62% at TRL 2–4 (concept through lab validation). Only 16 projects at TRL 7+.



PIPELINE SHAPE:

TRL 0–1: 42 projects (6%)
TRL 2–4: 424 projects (58%)
TRL 5–6: 92 projects (13%)
TRL 7–9: 16 projects (2%)
N/A: 159 projects (22%)

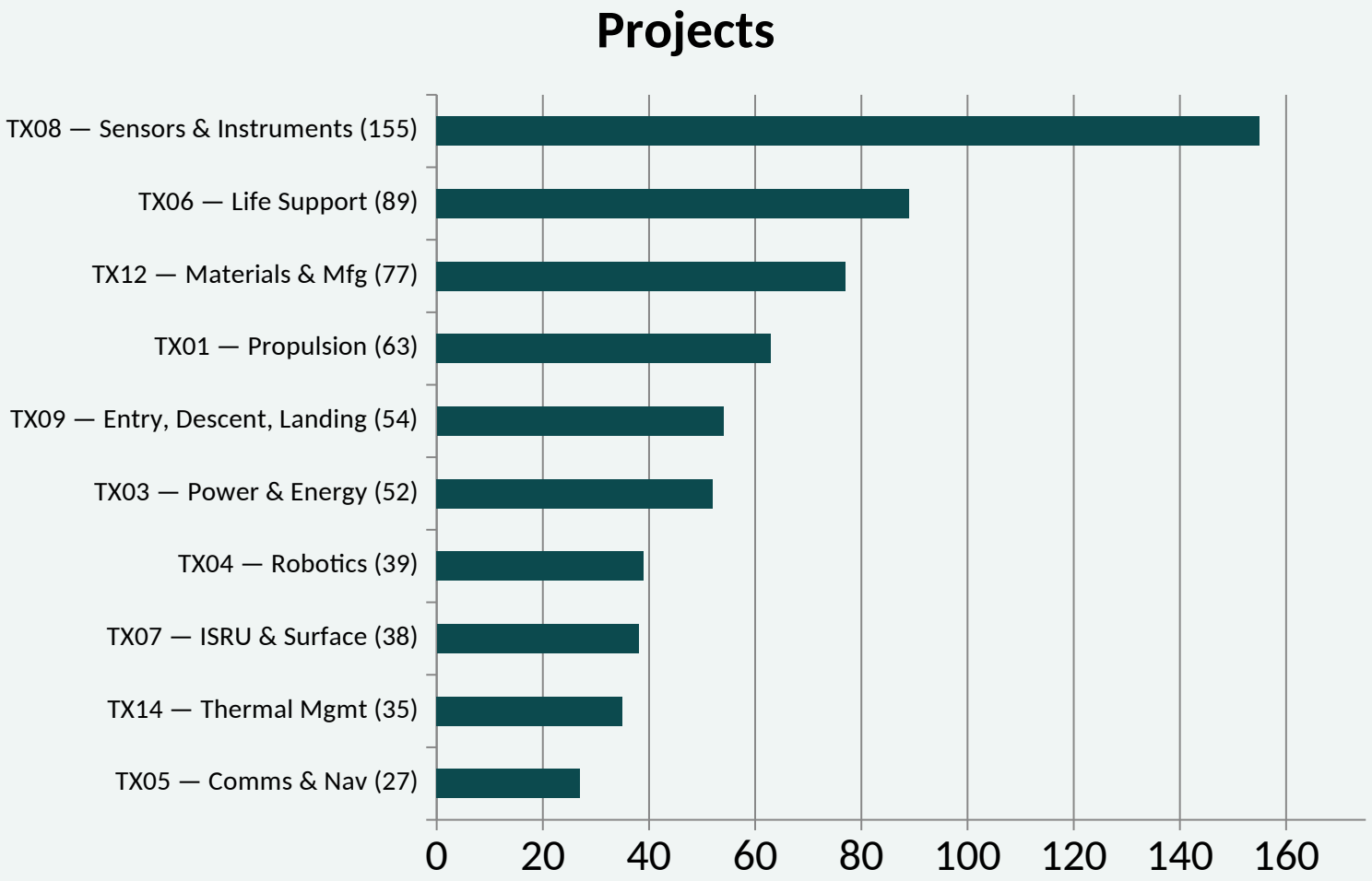
The portfolio is heavily front-loaded in early-stage research.

The "valley of death" between lab validation (TRL 4) and flight demo (TRL 7) is clearly visible.

Only 16 projects are near flight-ready — 2% of portfolio.

Top Technology Domains

Active projects by NASA taxonomy area



Sensors & Instruments (TX08) dominates — 155 projects, driven by SMD science instruments.

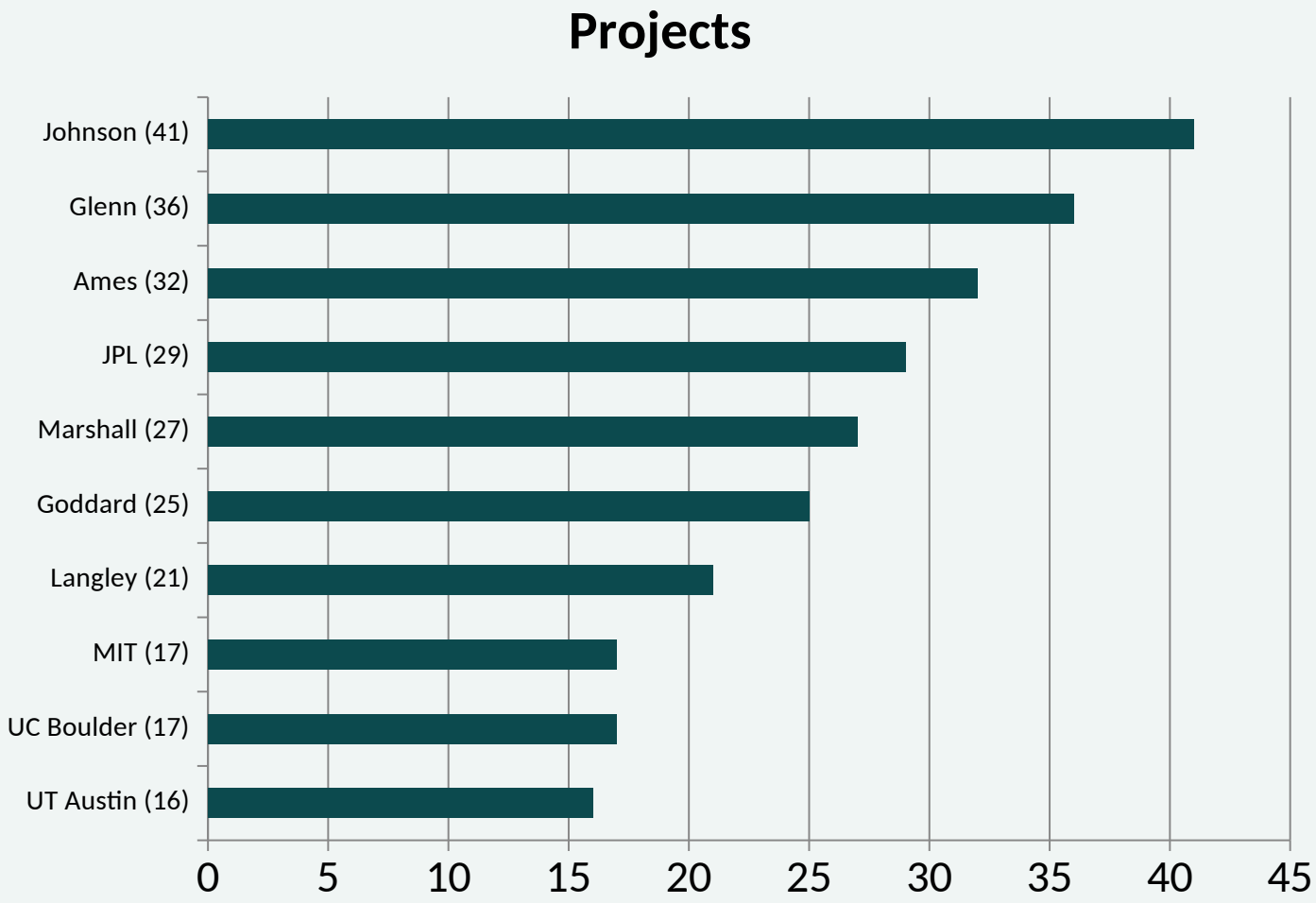
Life Support (TX06) at #2 reflects the Artemis habitation push.

Materials & Manufacturing (TX12) at #3 — in-space and lunar construction technologies.

These 10 domains cover the vast majority of active work.

Top Lead Organizations

Who is doing the work?



NASA CENTERS lead the top 7:
Johnson, Glenn, Ames, JPL, Marshall, Goddard, Langley

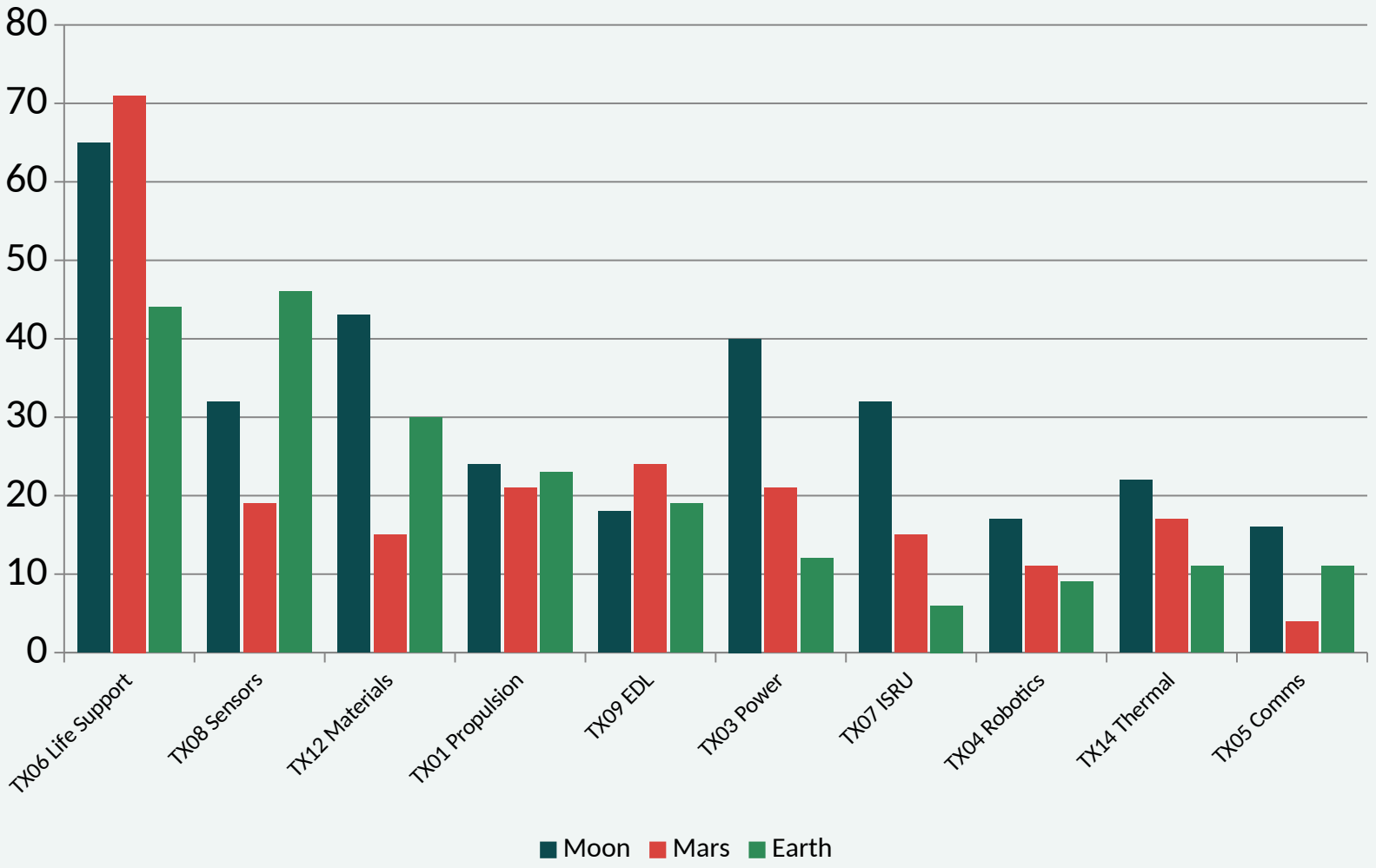
UNIVERSITIES in the top 10:
MIT, UC Boulder, UT Austin

This reflects lead org — many projects have university PIs with NASA center partnerships.

SBIR/STTR projects are led by industry but may not appear in the top 10 due to fragmentation across many small companies.

Where Tech Meets Destination

Top 10 technology domains × top 3 destinations for 733 active projects



KEY INSIGHTS:

Life Support (TX06) is #1 for both Moon AND Mars — the only domain where Mars > Moon.

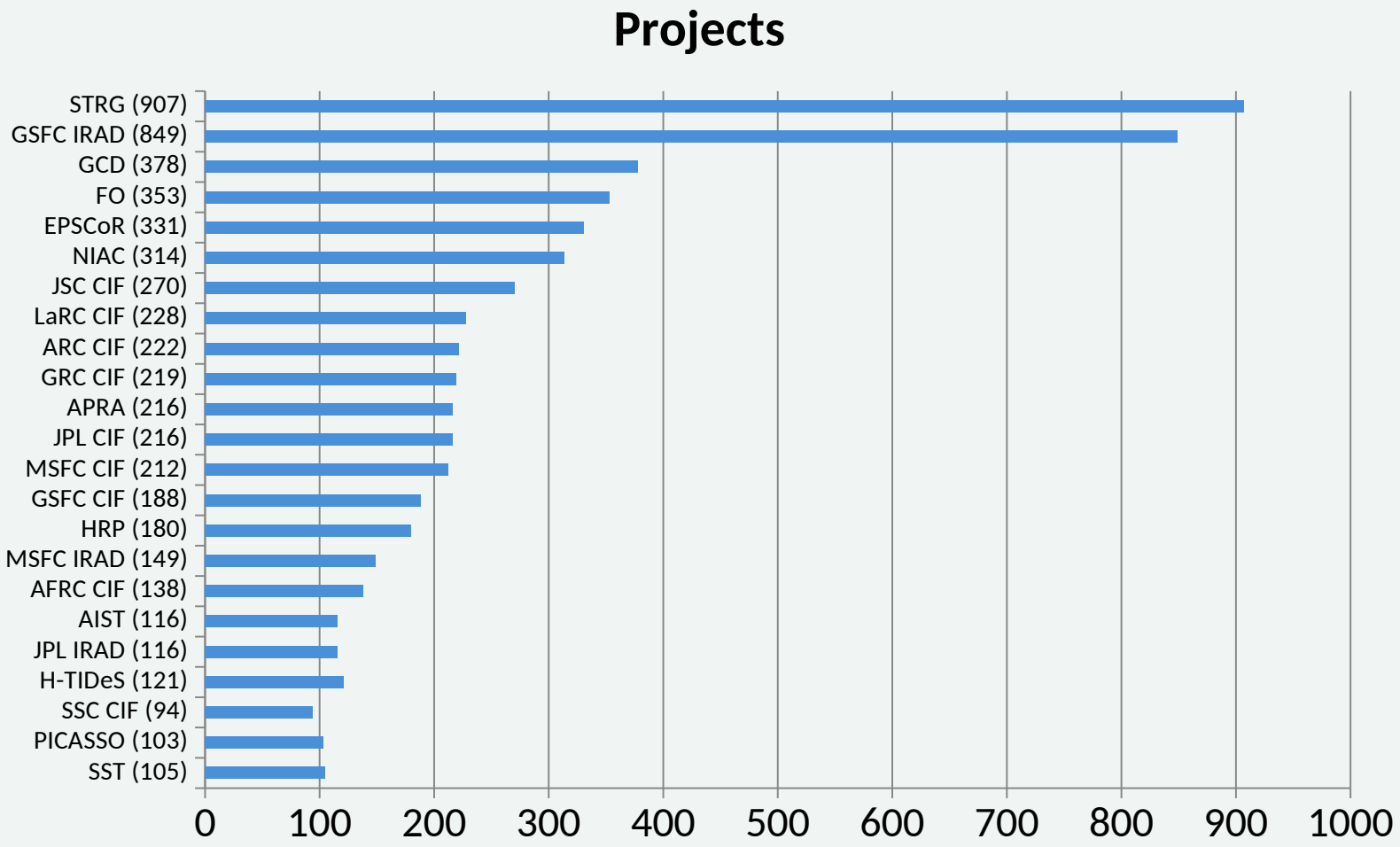
Moon-specific investments:
- Power (40 vs 21) — lunar night
- ISRU (32 vs 15) — regolith
- Materials (43 vs 15) — construction

Mars-specific investments:
- EDL (24 vs 18) — atmosphere
- Life support (71 vs 65) — duration

Gap: Comms has only 4 Mars projects — risk as missions scale.

Completed Projects: The Heritage Base

19,343 completed projects — SBIR/STTR is 63% of all completed work



SBIR/STTR: 12,134 completed
(not shown — would blow the scale)

Top 3 = 72% of all completed:
- SBIR/STTR: 12,134 (63%)
- STRG: 907 (5%)
- GSFC IRAD: 849 (4%)

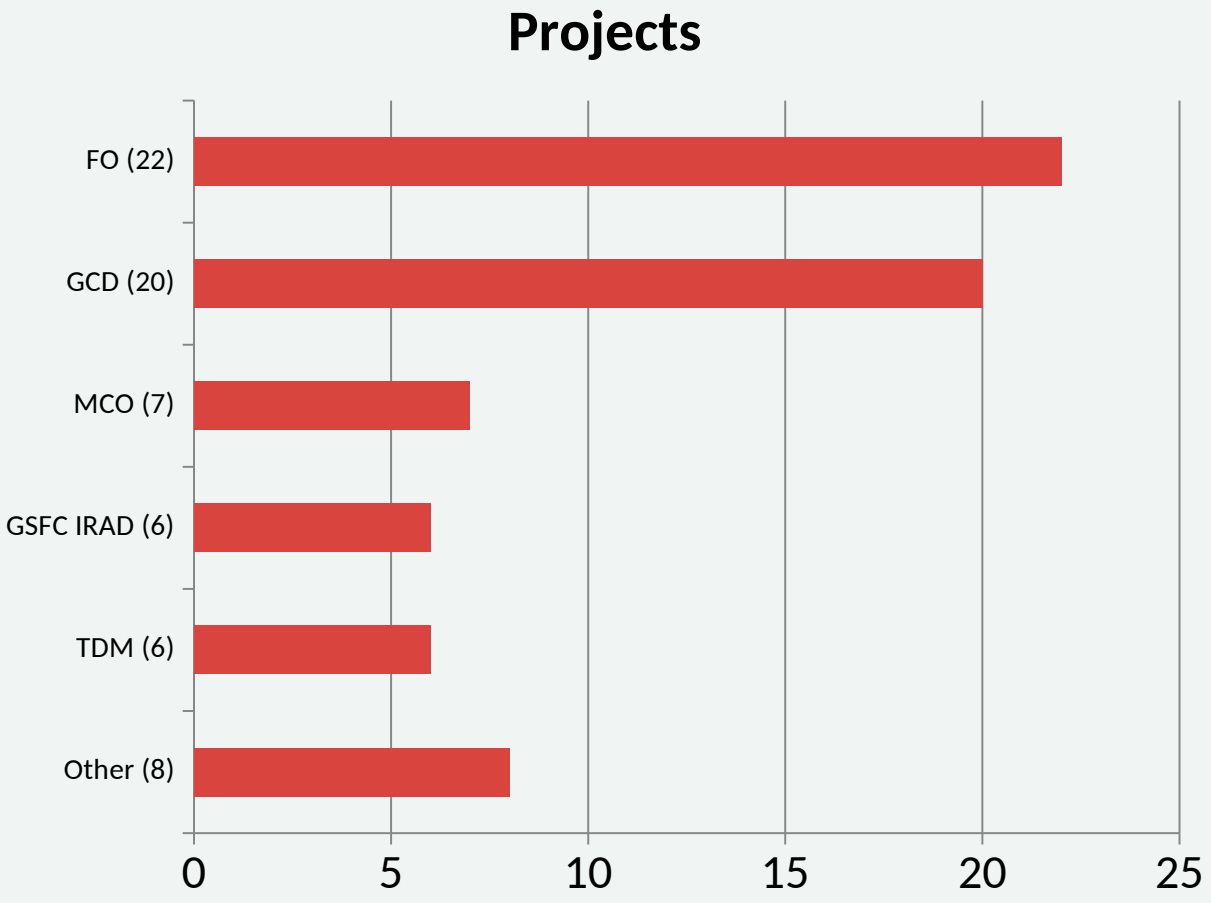
Top 10 = 80%
Top 25 = 94.5%

Center Innovation Fund (CIF):
1,922 projects — all completed, zero active. Program appears to have wound down.

GSFC IRAD is an outlier at 858 vs. other IRADs avg ~30-40.

Cancellations: Where Risk Lives

74 canceled projects (0.37%) — FO and GCD account for 57%



Cancellations concentrate in programs that push technologies toward demonstration — the stage where technical risk is highest and down-selects happen.

Flight Opportunities (FO): 22 canceled
Tests tech in flight environments
5% cancellation rate (22 of 430)

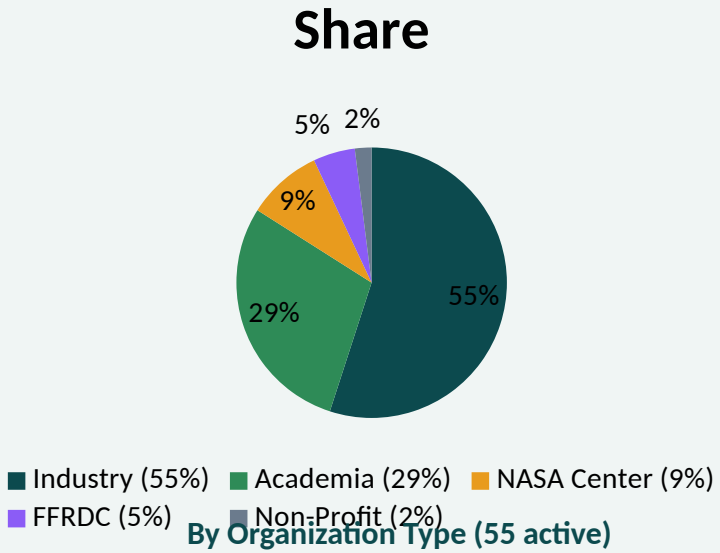
Game Changing Development (GCD): 20
Matures mid-TRL technologies
4% cancellation rate (20 of 468)

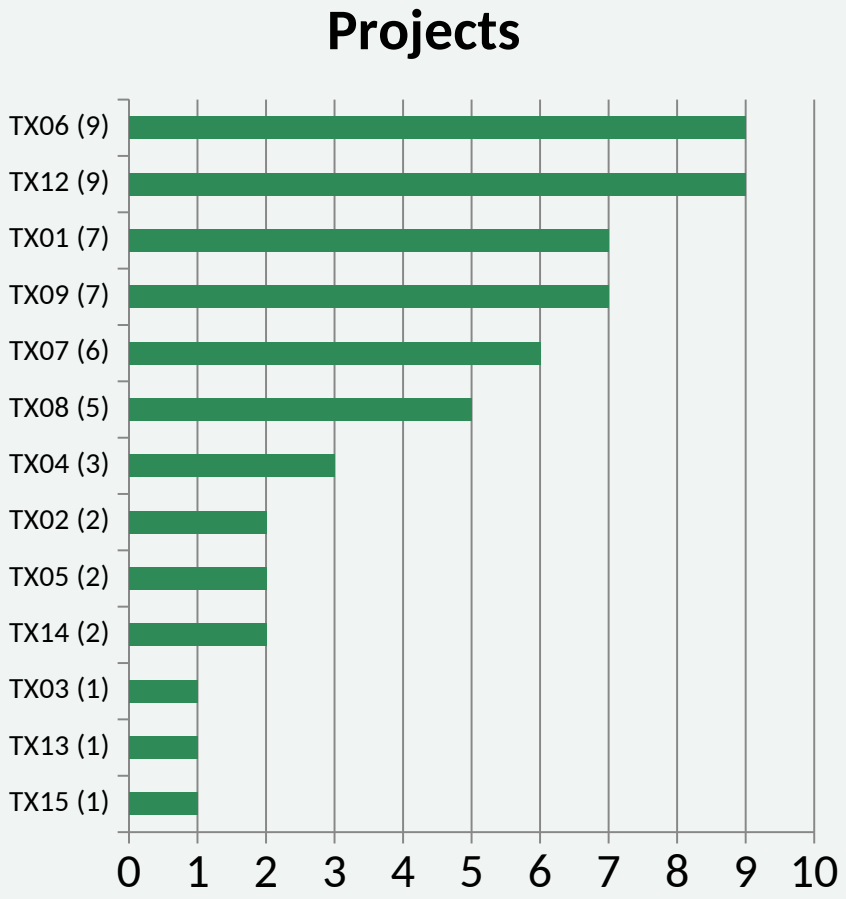
Technology Demonstration Missions: 6
8% cancellation rate (6 of 72)

Higher cancellation at higher TRL is expected and healthy — it means NASA is making down-select decisions.

Program Deep Dive: Flight Opportunities

430 total (55 active / 353 completed / 22 canceled)





FO is heavily industry-led (55%)

Top tech areas: Life Support, Manufacturing, Propulsion, EDL, ISRU

These are the building blocks for sustained lunar and Mars presence.

Key Observations

SBIR/STTR dominates everything — 12,272 projects (61% of portfolio). NASA's primary technology pipeline.

STMD owns 83% of all projects. The rest of the agency combined accounts for ~3,300 projects in TechPort.

Center Innovation Fund — 1,922 projects, all completed, zero active. Program appears to have wound down.

GSFC IRAD is an outlier — 858 projects vs. other center IRADs averaging ~30-40. Far more diligent reporting.

Many ESDMD vehicle programs are empty shells — Gateway, HLS, Orion, SLS show 0/0/0. These are platforms, not technology development programs.

Mars Campaign Office is ESDMD's workhorse — 122 total (49 active). Where Artemis-era tech actually gets tracked.

Cancellation rates are very low — 0.37%. Cancellations concentrate in FO and GCD where technical risk is highest.

HRP has wound down in TechPort — 1 active vs. 180 completed. May be tracking work elsewhere now.

15 programs show 0/0/0 — umbrella/parent programs, platforms, or tracking work through other mechanisms.

What TechPort does NOT cover: operational missions, science investigations, procurement contracts, cross-agency partnerships, policy initiatives.

Sources and References

Data Sources

- NASA TechPort public API — techport.nasa.gov/api
- NASA TechPort project database — techport.nasa.gov
- TechPort MCP server — nasatechport.alexandervandijk.com/mcp
- MCP server source code — github.com/tobedetermined/techport-mcp

METHODOLOGY

This analysis was produced using Claude (Anthropic) with real-time access to NASA's public TechPort database via a custom MCP (Model Context Protocol) server.

The MCP server queries TechPort's public REST API and returns structured project, program, and taxonomy data. No internal or restricted NASA systems were accessed.

All project counts were derived from the live TechPort index (~20,150 projects) queried on March 24, 2026.

All project IDs can be verified at: techport.nasa.gov/view/{projectId}

20,150 projects. 97 programs. One portfolio.

STMD owns 83% of the portfolio. SBIR/STTR is 61%.
62% of active projects sit at TRL 2–4. Only 16 are flight-ready.
The Moon is the #1 destination. Life support is the #1 investment.

Data: NASA TechPort public API · Analysis date: March 24, 2026

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