HYPERSCALE

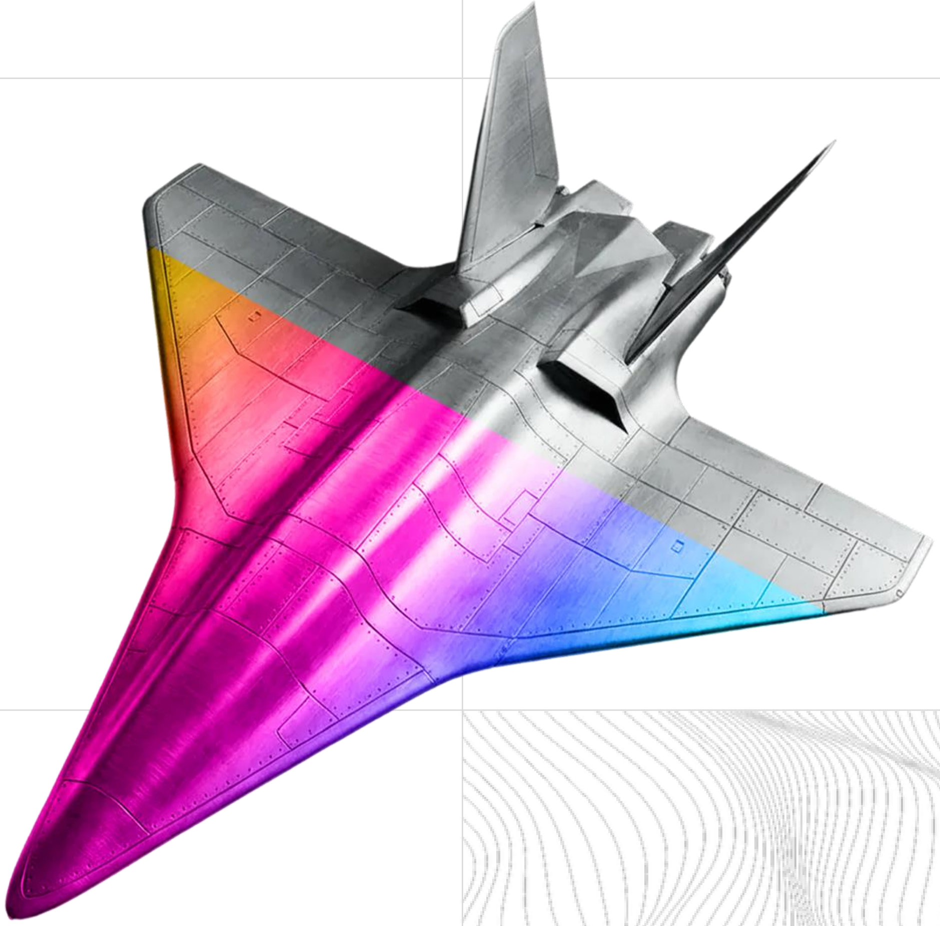
[MANUFACTURING-AS-A-SERVICE]

[Speed of Need]

2026

MAKING WHAT OTHERS CAN'T.

PRINTING CRITICAL METAL PARTS AT SCALE, ON DEMAND, AT THE SPEED OF NEED.



[Hyperscale Pitch Deck]

[Precision]

SAY IT CAN'T BE DONE

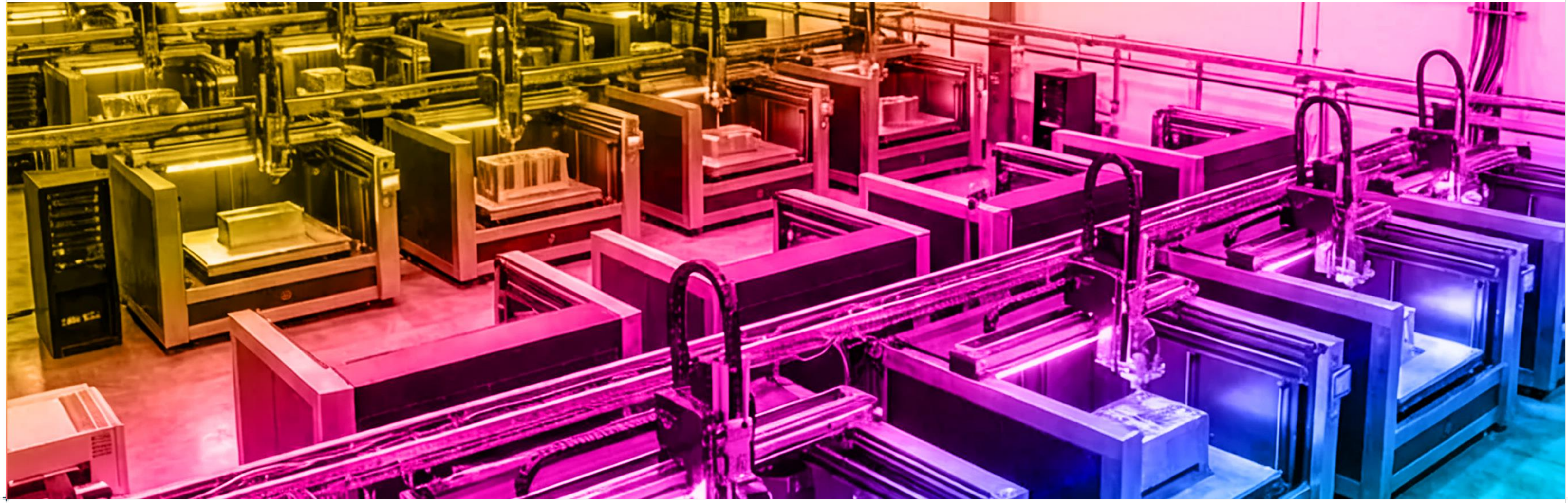
[Scalability]

VOL. 001

WE ARE RESTORING AMERICA'S ABILITY TO BUILD. AT SCALE.

DEMOCRATIZE METAL MANUFACTURING INFRASTRUCTURE

Providing access to proprietary advanced metal production capacity without capex, complexity, or delays.



AMERICA LOST THE ABILITY TO MAKE CRITICAL METAL PARTS THAT MATTER

Over decades, the United States lost the ability to manufacture at scale high temperature metal parts that are critical for hypsersonics, space, and energy. Foundries shut down. Metallurgy labor retired. Supply chains moved offshore.

-60%	3-5 YRS	12-18M	0
U.S. DOMESTIC FORGING CAPACITY (SINCE THE 1980S)	TIME TO BUILD A TRADITIONAL FORGING FACILITY	TYPICAL LEAD TIME FOR CRITICAL METAL PARTS (INCLUDING REFRACTORY)	CAPACITY TO MANUFACTURE REFRACTORY METAL PARTS AT SCALE

US MANUFACTURING CAN NOW COMPETE WITH CHINA

Forging prices. Additive Manufacturing Speed.

01 BLUE LASER LEFT THE LAB

Can melt ALL metals including refractories used in hypersonics & space

02 SPEED BECAME EXISTENTIAL

12–18 month lead times went from annoying to fatal. The cost of waiting now exceeds the cost of parts.

03 RESHORING WITHOUT INFRASTRUCTURE

Manufacturing must come home. But foundries closed. Expertise retired. We can't rebuild the old way.

04 OPEX REPLACED CAPEX

The cloud model won. CFOs want variable costs, not depreciating assets. Access beats ownership.

ADDITIVE MANUFACTURING HIT A WALL. HYPERSCALE BROKE THROUGH.

2025

HYPERSCALE

[FUSES MICROWIRE LAYER BY LAYER]]

Economics finally work to scale. Forging prices at AM speed.

~3000 BCE

FORGING

[SHAPE METAL WITH FORCE]

Slow, limited geometries

1880s

CASTING

[POUR MOLTEN METAL IN MOLDS]

Tooling cost, minimum orders

1950s

CNC

[SUBTRACT FROM SOLID BLOCK

50-90% material waste

1990s

POWDER AM

[MELTS POWDER LAYER BY LAYER]

$500K+ machines, $100–$300/kg powder. 50–70% material waste and extensive post-processing

CHEAPEST $/GRAM ON EARTH

Forging prices. Additive Manufacturing Speed.

20X CHEAPER MACHINES

PROPRIETARY BLUE LASER MICROWIRE MANUFACTURING PLATFORM

10X CHEAPER FEEDSTOCK

MICROWIRE VS. POWDER

<1% WASTE

99%+MATERIAL UTILIZATION

BLUE LASER

REFRACTORIES + STRONGER PARTS

MINIMAL POST PROCESSING

NORMALLY 50% OF THE PART COST

HYPERSCALE

[Parts on Demand] [Speed of Need]

COMPARING MANUFACTURING METHODS - USING THE RIGHT TOOL IN THE TOOL BOX

01 FORGING/ MACHINING

Good combination of strength and toughness

Ex: compressors on gas turbine engines

Good for precision parts with smooth surface finishes. Bad due to long lead time for forgings, high buy-to-fly ratio, geometry limited by machining access

02 CASTING

Used for large quantity, low ductility parts

Ex: Single crystal turbine blades, aluminum gearboxes, engine blocks

Good for large parts, inexpensive parts, alloys that are difficult to forge. Bad for precise tolerance, high ductility parts. Long lead times for tooling.

03 DED

Used for large parts, cladding

Ex: rocket motors, cladding of mining/drilling equipment

Good for simple, rapid, large parts that may change in design. Bad for surface finish and dimensional accuracy

04 MICRO DED

Proposed use for large, lightweight parts

Ex: High temperature ducts, large topology optimized parts

Good for better surface finish, better mechanical properties, smaller minimum features than DED. Bad for small, heavy, simple parts that are cheaper to machine from solid.

05 LPBF

Used for small-medium, complex parts.

Ex: valve bodies, human implants, nozzles

Good for cast-like surface finishes, small features, tight tolerances (for additive). Bad for residual powder, new/expensive alloys, parts larger than a cubic foot.

06 BINDING/ SINTER

Used for small parts that can survive debinding and sintering

Ex: gears, brackets

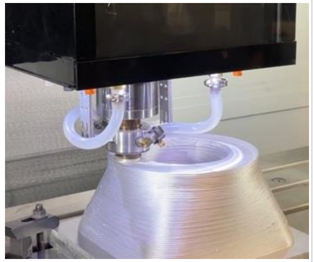
Good for extruded shapes that are self-supporting during sintering. Bad for thick cross sections that will not debind, unsupported geometries that will sag during sintering

07 SOLID STATE

Used for fully supported geometries

Ex: flat panels with embedded sensors

Good for forged properties, soft alloys of aluminum, copper, niobium. Bad for harder alloys, unsupported geometries, tall parts.



HYPERSCALE'S PROCESS ADVANTAGE

CAPABILITY RESULTS:

RAPID DESIGN ITERATION | DEPLOYABLE | LOW COST | 1000'S OF METALS | SAFE | COMPLEX GEOMETRIES | PARTS IN ZERO-G

SPEED

2X
FASTER THAN POWDER BED FUSION

8hr vs 16hr print speed
10–30X faster material sourcing (days vs months)

10-100X
FASTER THAN TRADITIONAL METHODS

Days vs 12–18 months
For forging and casting
Continuous design iteration

REPAIR/BUILD-ON
PRINT ON EXISTING PARTS

Fuse new material onto legacy components
For repair or feature addition

EFFICIENT MATERIALS

~1.1
BUY-TO-FLY RATIO

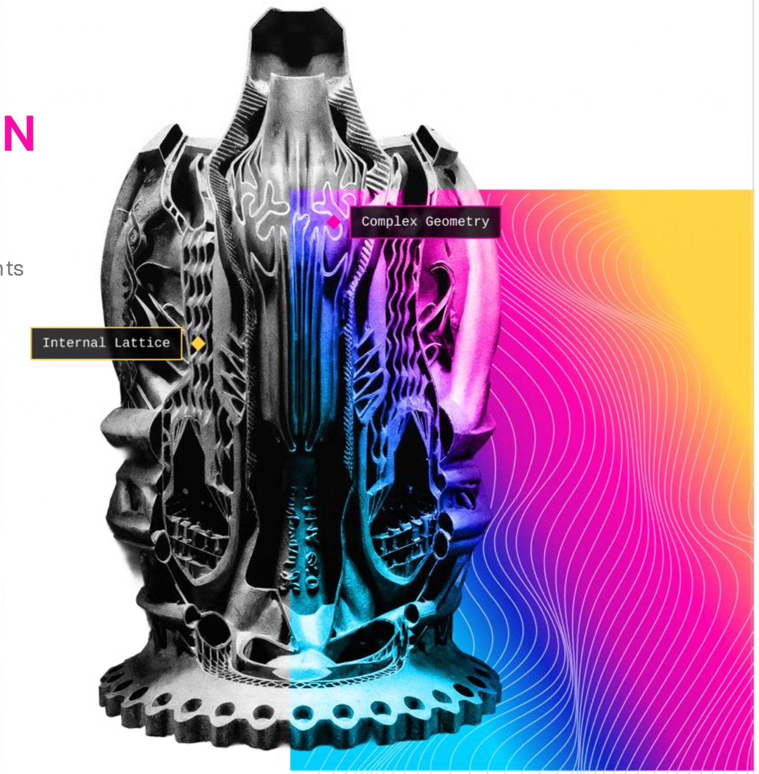
From 30:1 to near 1:1
CNC machining wastes 80–97% of raw material

<1%
WASTE

99%+ material utilization

MINIMAL POST PROCESSING

Normally 50% of the part cost



DUAL-USE CAPABILITY

ENERGY

High-temperature, refractory metal components for extreme environments

AUTOMOTIVE

Structural and performance-critical metal components

MEDICAL

Precision metal parts for regulated, high-reliability systems

MARITIME

Durable, corrosion-resistant components for unmanned and crewed systems

AERO

Flight-critical components for aircraft and advanced air systems

HYPERSONICS

Hypersonic systems and vehicles – primarily targeting refractory metal components

MUNITIONS

Munitions parts and casings

INDUSTRIAL

Sustainment and replacement parts for critical infrastructure

UAVS

Low-cost, mass quantity unmanned systems

SPACE

Space vehicle and equipment parts

APPLICATIONS AND MATERIALS

HIGH TEMPURATURE ALLOY

High-Temperature / Refractory alloys such as tungsten, molybdenum, and rhenium are particularly useful in industries where extreme conditions – such as high heat, corrosion, or pressure – are prevalent.

W — **TUNGSTEN**
Rocket engine nozzles and heat shields.

Mo — **MOLYBDENUM**
Missile and aircraft parts exposed to intense heat.

Ta — **TANTALUM**
Turbine blades and other high thermal stress applications.

Nb — **NIOBIUM**
Used in rocket engines and jet engines for its ability to maintain structural integrity at high temperatures.

Re — **RHENIUM**
Enhances the properties of high-temperature superalloys used in jet and rocket engines.

ADVANCED / REFRACTORY ALLOY SYSTEMS

W-Re — **TUNGSTEN-RHENIUM**
This alloy offers improved ductility and higher recrystallization temperatures, making it ideal for thermocouple wires and other high-temperature applications.

MHC — **MOLYBDENUM–HAFNIUM–CARBID**
This alloy offers improved ductility and higher recrystallization temperatures, making it ideal for thermocouple wires and other high-temperature applications.

NB-10HF-1TI — **NIOBIUM-ALLOY C-103**
Commonly used in aerospace applications, such as rocket thruster nozzles, due to its high melting point and strong fabrication characteristics.

HAYNES 230 — **HAYNES 230**
Used for combustion cans, transition ducts, flame holders, and thermocouple sheaths, requiring high heat and corrosion resistance.

HYPERSCALE IS THE MANUFACTURING CHEAT CODE

	HYPERSCALE	Powder Bed Fusion	Binder Jetting	CNC	Casting	Forging
Time to Part	Days	Weeks-Months	Months	Weeks-Months	Months	12-18 Months
Upfront Capital	None	High	Very High	Moderate	High	Extreme
Scale on Demand	Elastic	Constrained	Constrained	Constrained	Constrained	Fixed
Inventory Risk	None	Medium	High	Medium	High	Extreme
Refractory Metals	Yes	No	No	Limited	No	Slow
Structural Strength	Forging equivalent	Lower	Lower	Stock Dependent	Lower	Baseline
Iteration Speed	Continuous	Limited	Limited	Moderate	Slow	Very Slow
Domestic Control	100% US	Partial	Partial	Mixed	Mixed	Foreign-heavy
Economic Model	Access	Own Machine	Own Machine	Own Machine	Own Tooling	Own Tooling

GEN 1 ALPHA
PRINTER

2023

CRISIS

[Proof of Concept}

15 MONTHS | Initial Funding

2024

FUNDING

[AMERICA MAKES & OSW MANTECH FUNDED]

2025

VALIDATED

[AIR FORCE RESEARCH LABORATORY]

TODAY

BUILDING

[OSW FUNDING TO ACCELERATE REFRACTORY GEN 2 COMMERCIAL MANUFACTURING PLATFORM]

PENTAGON DEMAND

$2.17M

OSW FUNDING DELIVERED

$10M

FY27 NOMINATED

America Makes congressional add

METAL PARTS MANUFACTURING MARKET

TAM

$379B+

*GLOBAL FORGING ($145B) +
CASTING ($234B)

SAM

$38-57B

*US ONLY | CERTIFIED & NON-CERTIFIED
UNCLASSIFIED

SOM

$7-11B

*US ONLY | NON-CERTIFIED
UNCLASSIFIED

*SOURCES IN APPENDIX

THE CLOUD MODEL FOR MANUFACTURING

On-Demand. Elastic. Certified. Infrastructure free

01 PARTS SALES

Per-pound or per-part pricing. Pay only for what you print. No minimum orders.

02 RESERVED CAPACITY

Buy production blocks (lbs/month). Prepaid revenue funds hub expansion.

03 GUARANTEED TURN AROUND

24-hour, 72-hour, 7-day turnaround. Premium pricing for speed guarantees.

04 DIGITAL VAULT

Secure storage of designs and full digital thread. Certification records for every part.

05 MARKETPLACE

Future: Licensed part designs. Instant ordering of pre-certified components..

CUSTOMER JOURNEY

UPLOAD A CAD FILE
[CUSTOMER]

▶

BUILD PART IN HUB
[[HYPERSCALE PLATFORM]]

▶

DELIVER PART
[DAYS NOT MONTHS]

1 PRINTER = $900K GROSS PROFIT/YR

ROI < 1 MONTH

PER PRINTER/YEAR

DEPOSITION RATE	20 LBS/DAY
@ 80% UTILIZATION	~7,200 LBS/YEAR
AVERAGE PART WEIGHT	20 LBS
PARTS PER PRINTER	~360 / YEAR
ASP (STEEL / AL / CU / INCONEL)	$5,000
COGS PER PART	$2,500

$1.8M/YR REVENUE PER PRINTER

$900K/YR GROSS PROFIT

HUB SCALE ECONOMICS

10 PRINTERS
[END 2026 BUILD, 2027 REVENUE]

REVENUE: $18M

GROSS PROFIT: $9M

100 PRINTERS
[2028+]

REVENUE: $180M

GROSS PROFIT: $90M

PROVEN EXECUTION TRACK RECORD

DR. ELISA TEIPEL

CEO

SERIAL ENTREPRENEUR. SYSTEMS THINKER DRIVING MANUFACTURING NETWORKS, EXPERIENCED EXEC IN TECH START UP & SCALING AND EXIT.

DR. KEVIN HOLDER

COO

OPERATIONAL LEADER, SCALED PREVIOUS AM COMPANY TO ACQUISITION. MATERIAL SCIENCE EXPERT.

ALEX (STOIKY) GOLDBERG

CRO

OVERMATCH VENTURE CAPITAL
USAF FIGHTER PILOT, DARPA, DIU AUSTIN DIRECTOR, UCLA. STANFORD GSB

QUIN SHUCK

CHIEF ENGINEER

ROLLS-ROYCE AERO, HYPERSONIC ALLOYS METALLURGY EXPERT, 50+ PATENTS

THE FUNDING ROADMAP

Multiple paths to scale

SEED ROUND

$5M

[SEED OBJECTIVES END 2026]

FIRST HUB: 10 PRINTERS OPERATIONAL

STEEL QUALIFIED

LIVE ON XOMETRY / PROTOLABS

COMMERCIAL CUSTOMERS

CASH-FLOW POSITIVE

GOVERNMENT FUNDING

$10-15M (NON-DILUTIVE)

2028

$500M ARR

MULTIPLE PATHS
SERIES A OPTIONAL

NON-DILUTIVE

$10M+ AMERICA MAKES FY27
DIU, MANTECH, DPA TITLE III

CUSTOMER-FUNDED

CAPACITY RESERVATIONS (PREPAID)
LTAS FUND HUB EXPANSION

DEBT / PO FINANCING

ASSET-BACKED (PRINTERS)
PURCHASE ORDER FINANCING

SERIES A (IF NEEDED)

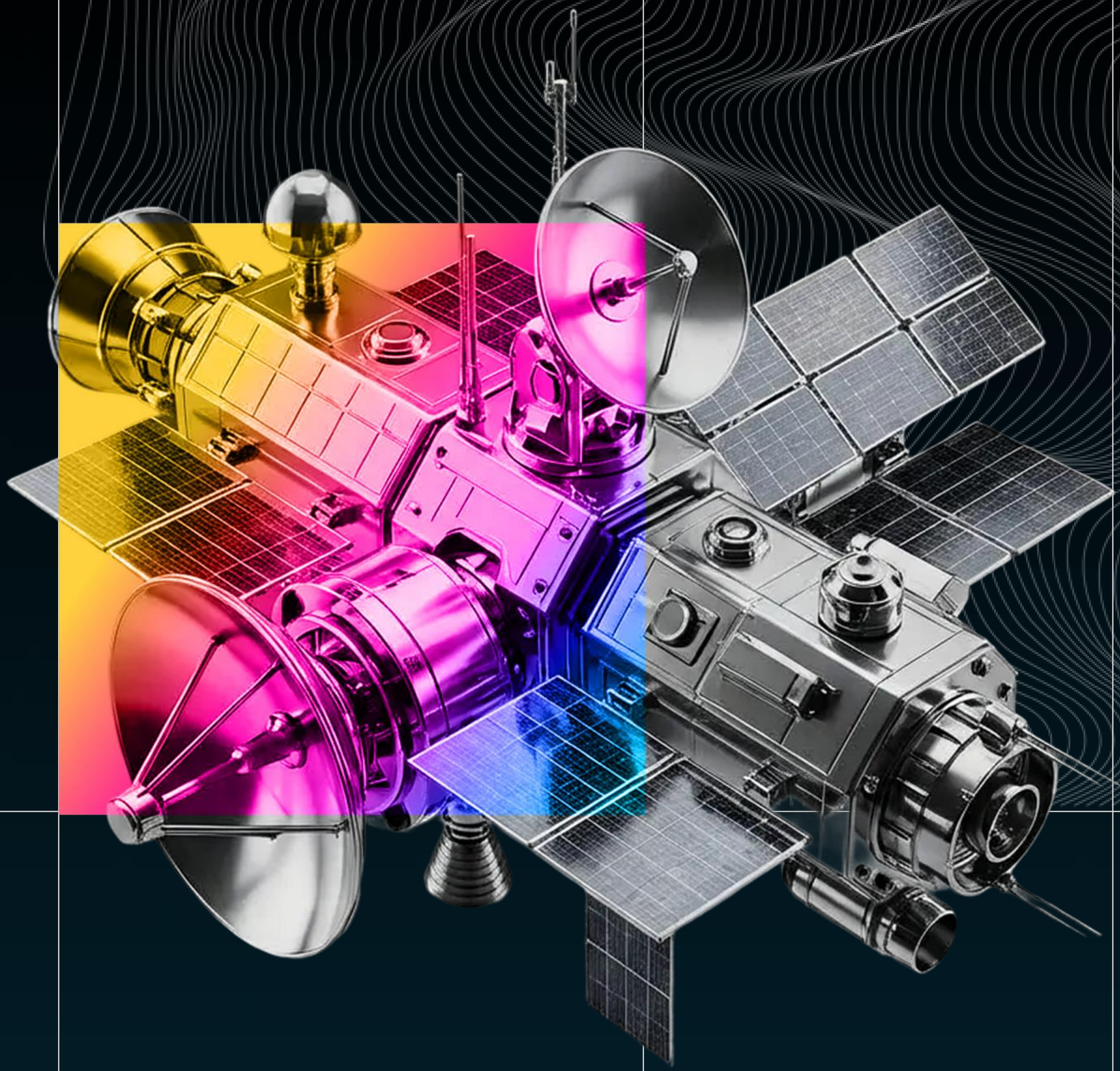
$30M
TO ACCELERATE 3+ HUBS EXPANSION

[SCALE OBJECTIVES] 3 hubs | 100+ printers | refractories | certification | marketplace

HYPERSCALE

SAY IT CAN'T BE DONE.

[JOIN US]



SOURCES

TAM calculated as non-overlapping sum of forging and casting markets (distinct manufacturing processes).

SAM filters for parts within Hyperscale's 500 × 500 × 1000 mm build volume at cost parity with traditional methods.

SOM further constrained to US market, uncertified applications, and near-term accessible verticals (defense, aerospace, energy, heavy equipment)

DISRUPTION THESIS
At price parity with forging/casting + AM speed, Hyperscale doesn't just compete in the ~$35B metal AM market — it captures share from the $379B traditional manufacturing base. This represents true market creation, not incremental AM growth.

SOURCES

1. Grand View Research — Metal Forging Market Report, 2024
2. Grand View Research — Metal Casting Market Report, 2024
3. Precedence Research — Metal Casting Market Size, 2024
4. IMARC Group — Metal Forging Market Analysis, 2024
5. Grand View Research — Metal 3D Printing Market, 2024
6. Technavio — North America Forging Market, 2024

WE ARE COMPRESSING HYPERSONIC MANUFACTURING TIMELINES FROM OVER A YEAR TO DAYS

We achieve ~0.5 mm feature resolution, ~±0.1 mm accuracy, and ~20 micron surface finish—but more importantly, we sit in the gap between powder bed precision and traditional DED scale.

01 PRECISION AND CLARITY

- ~±0.1 mm (100 microns) dimensional accuracy
- ~±0.01 mm motion repeatability

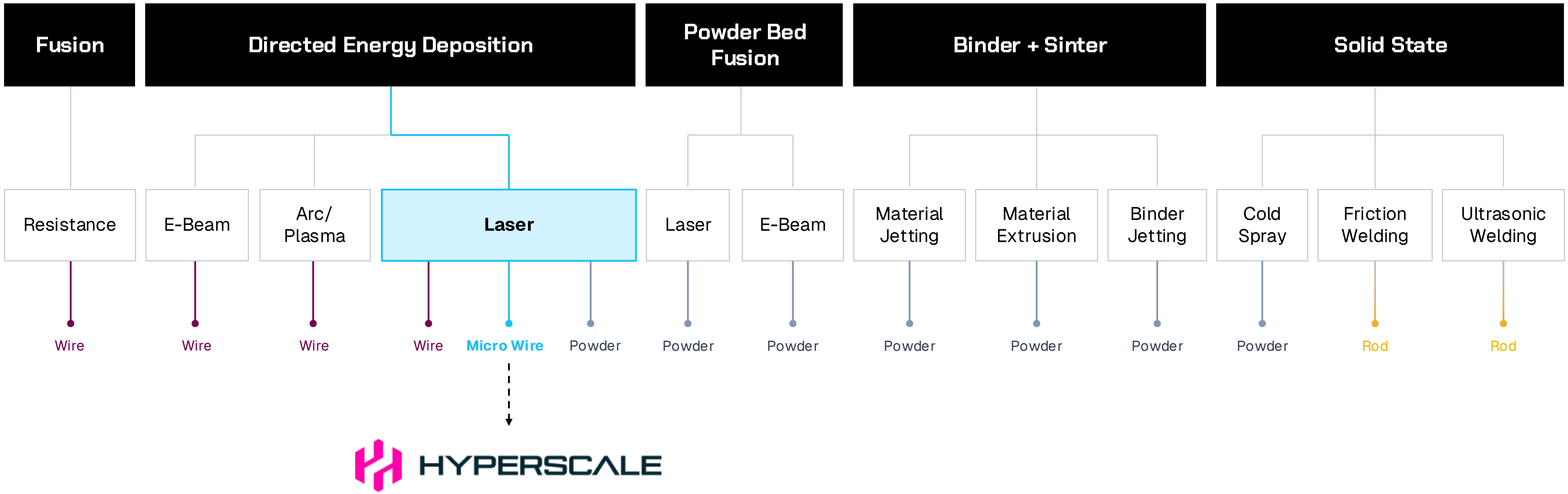
02 SURFACE QUALITY

~20 micron Ra (as-built)
Further improved with laser polishing

03 FINE FEATURE CAPABILITY

Thin-wall features down to ~0.5 mm

SAMPLE METAL AM LANDSCAPE

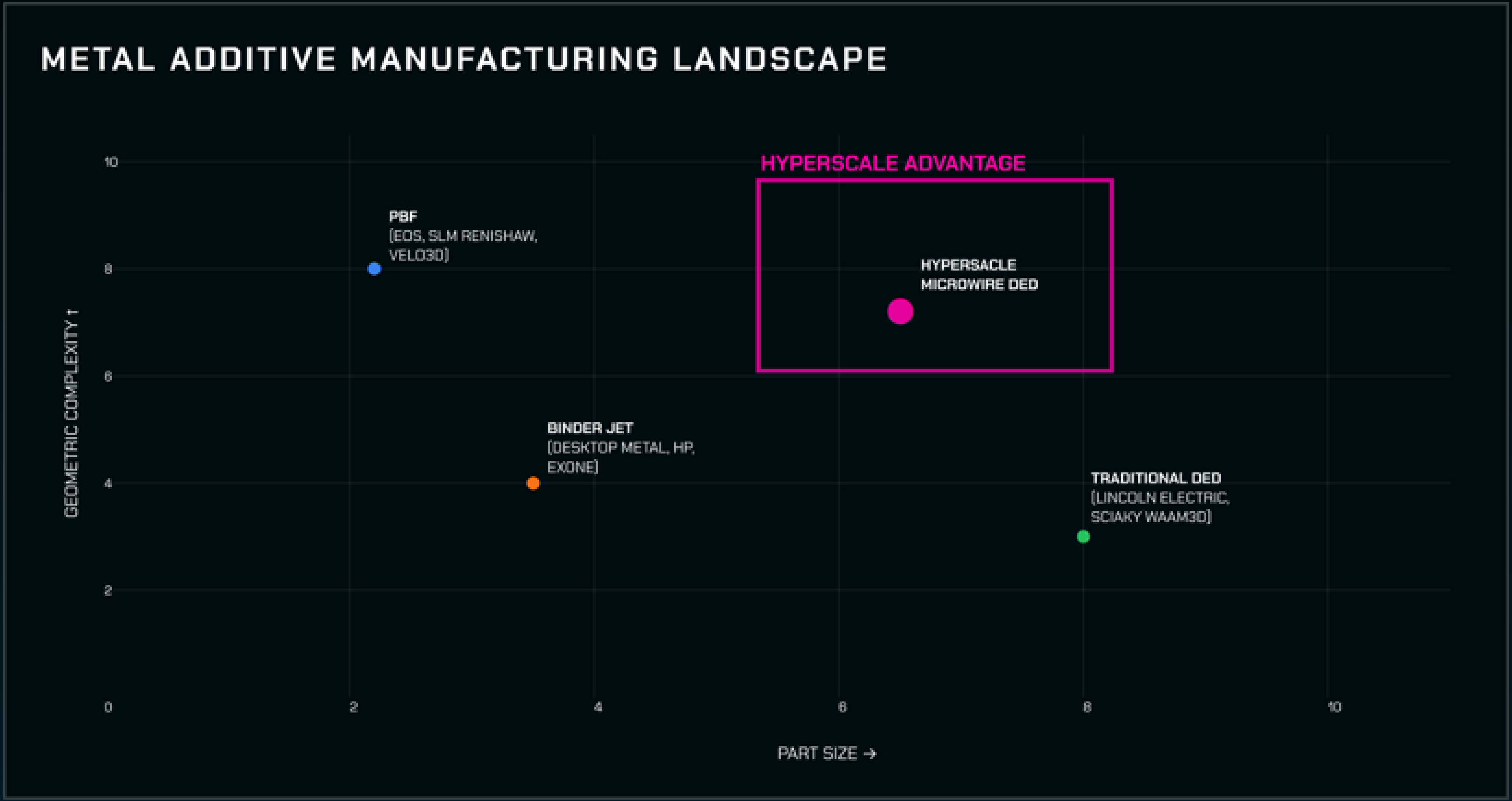


WE DELIVER THE RESOLUTION NEEDED FOR FUNCTIONAL, FLIGHT-CRITICAL GEOMETRIES—WITHOUT SACRIFICING SCALABILITY

	HYPERSCALE	Powder Bed Fusion	Traditional DED
Resolution	~0.5mm features	~50-100µm	1-3 mm
Strength	Mid-scale, complex, and functional parts	Small, high-detail parts	Large, rough structures

We sit in the white space—where parts are too complex for traditional DED and too large or inefficient for powder bed.

WHY MICROWIRE DED



01

MEDIUM-LARGE PARTS
better precision than traditional DED

02

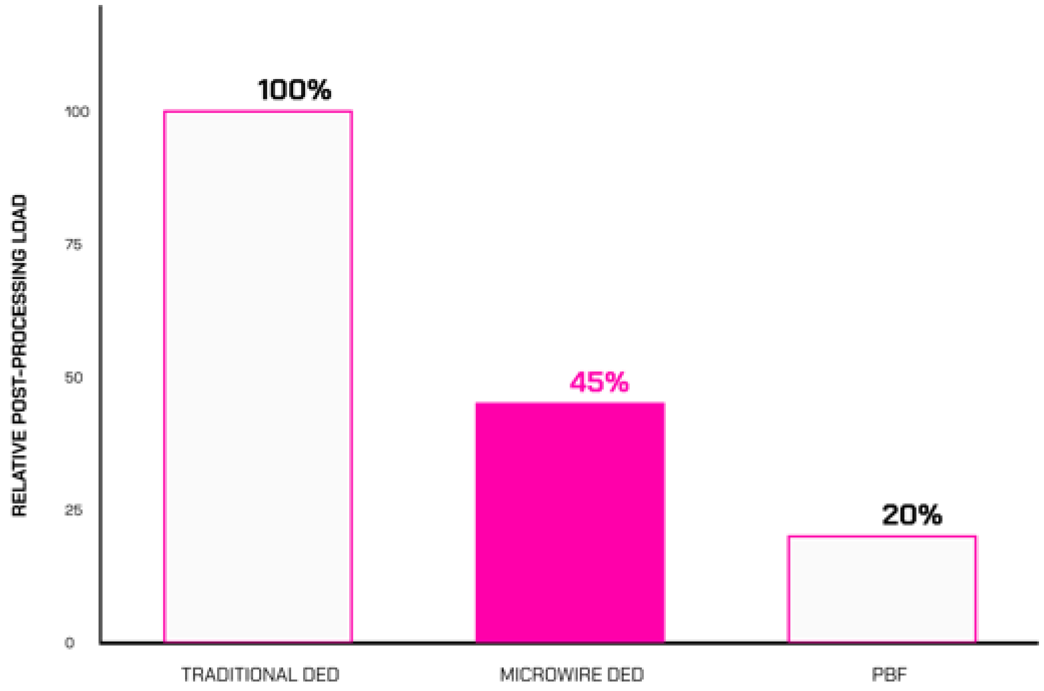
LESS POST-PROCESSING
near-net shape reduces machining load

03

REFRACTORY CAPABILITY
tungsten, molybdenum, tantalum, niobium alloys

REDUCE POST PROCESSING

MICROWIRE DED DELIVERS A CLEANER NEAR-NET SHAPE THAN TRADITIONAL DED



01 WHAT IT'S BEST FOR

- Medium-large structural parts
- Thermal / propulsion hardware
- Refractory metal components
- Faster production with less finishing

02 MICROWIRE DED= SCALE+ PRECISION

Microwire DED delivers not just scale and precision, but cost efficiency and rapid scalability. Built from largely off-the-shelf components, these low-cost machines enable fast deployment and iteration—critical for industries like drones where technology evolves quickly and stockpiling becomes obsolete.

TRADITIONAL VS. HYPERSCALE