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Robotics: The Hidden Complexity
and the ellipsis Venture edge

Robert MacKenzie (Dr. sc ETH Zurich)

Technology Company Builder & Investor

20+ Years

- Venture Partner, Ellipsis Venture
- CPTO, ANYbotics (Autonomous Robots)
- CPTO, Labster (3D Digital Education)
- Sr. Product Lead, Hocoma (Robotics, Medical)
- …
- Doctorate, ETH Zurich



ETH zürich · Hocoma a DIH brand · Labster · ANYbotics · ellipsis · TWINT

From Complex Tech to Scalable Products

Senior Product Manager: Scaling MedTech & Wearables Globally

Lives changed daily

Hocoma



CPTO: Scaling EdTech Software

Millions of global users

Labster

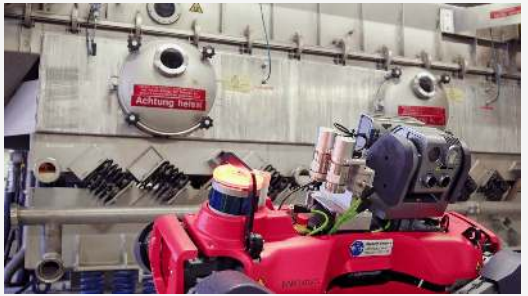


CPTO: Scaling Autonomous Robotics

Complex made simple & real: Robots doing real work globally

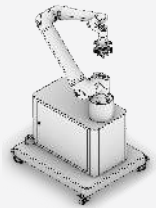
AMV botics





Robotics Activity

Flink





Levtek





ellipsis

Robotics Venture Collective

CEIBS

Distinguished Lecturer

Robotics, Physical AI, Innovation and Organizational Leadership

SHIRAZ AI



Nio Robotics





MacKenzie

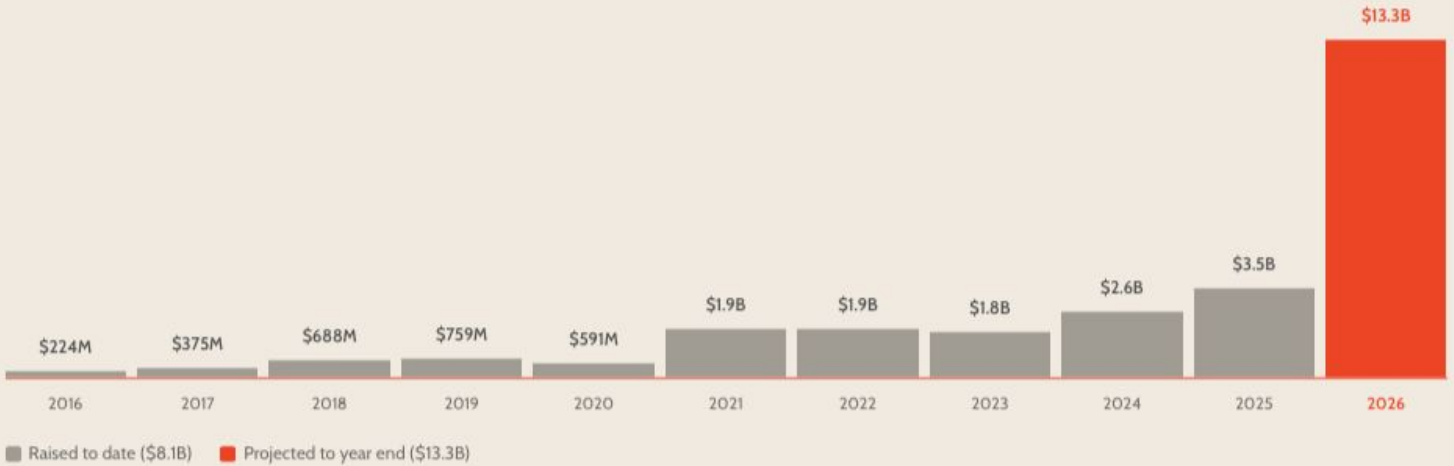
EXECUTIVE ADVISORY

Robotics & AI

Investibility, tangible

EUROPEAN ROBOTICS VC FUNDING HAS REACHED $8.1B IN 2026, ALREADY THE MOST ACTIVE YEAR ON RECORD

As of August 2026, European VC funding in this market is expected to reach $13.3B by year end.



Source: Dealroom.co, data as of August 2026, via *Prosus Ventures Robotics Report.*



https://roboticsfinancingprimer.lovable.app/

Hottest Robotics Segments?

VC Activity

Valuation Upside

Area	Market Size (TAM), $B				Scalability	Moat	Valuation Upside (2030 -> 2035)
	2025	2030	2035	2050			
Autonomous Vehicles	70	2[illegible]	1000+	**5000+**	Moderate	High	$100B -> **$500B+**
Humanoids & Animal Robots	[illegible]	[illegible]	[illegible]70	**5000+**	High	Moderate	$10B -> $100B+
Unmanned Aerial & Marine	35	60	150	~500	[illegible]	[illegible]	$100B -> $200B
Medical Robotics	22	45	155	~300	Moderate	**Massive**	$20B -> $100B+
Service Robots	[illegible]	[illegible]	[illegible]400	**~1000**	Moderate	Moderate	$30B -> $100B+
Warehouse Automation	25	55	200	~300	High	Moderate	$50B -> $100B+
Hardware Components	40	[illegible]	500	**~1000**	High	Limited	$10B -> $100B
Software for Robots	10	30	200	~300	**Massive**	Limited	$50B -> $100B
Robotic Arms	35	65	140	~300	High	Moderate	$10B -> $50B
Laboratory Automation	10	15	35	~100	Moderate	**Massive**	$10B -> $100B

70x

5000x

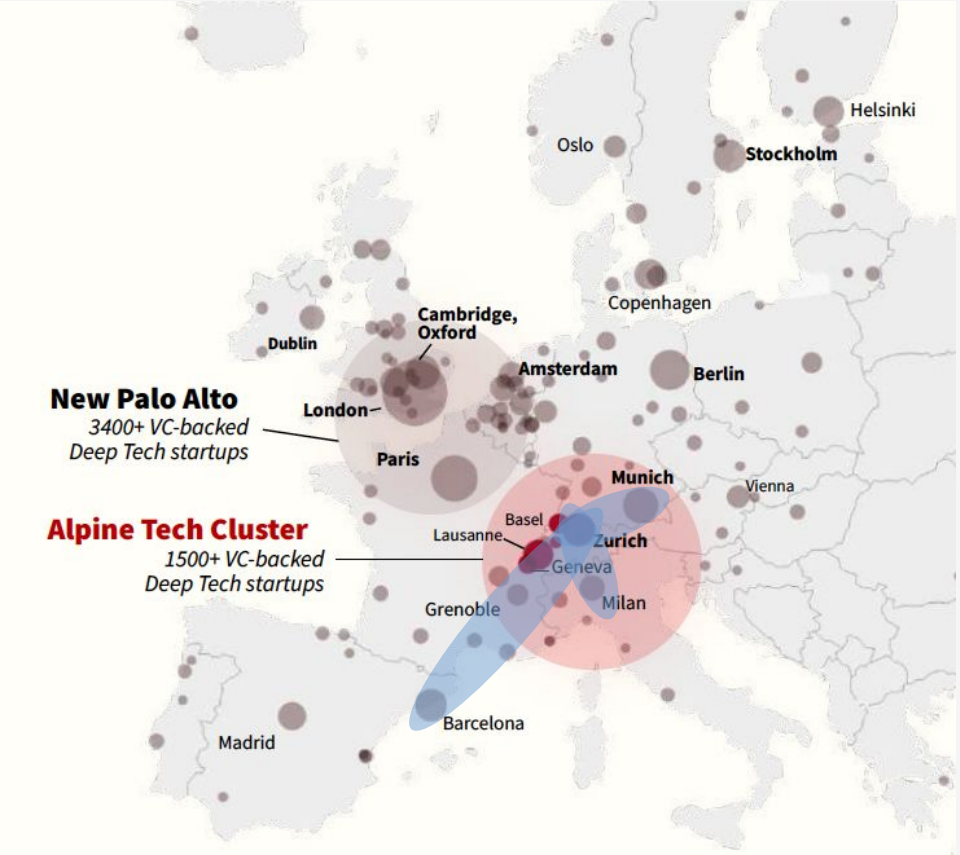
100x

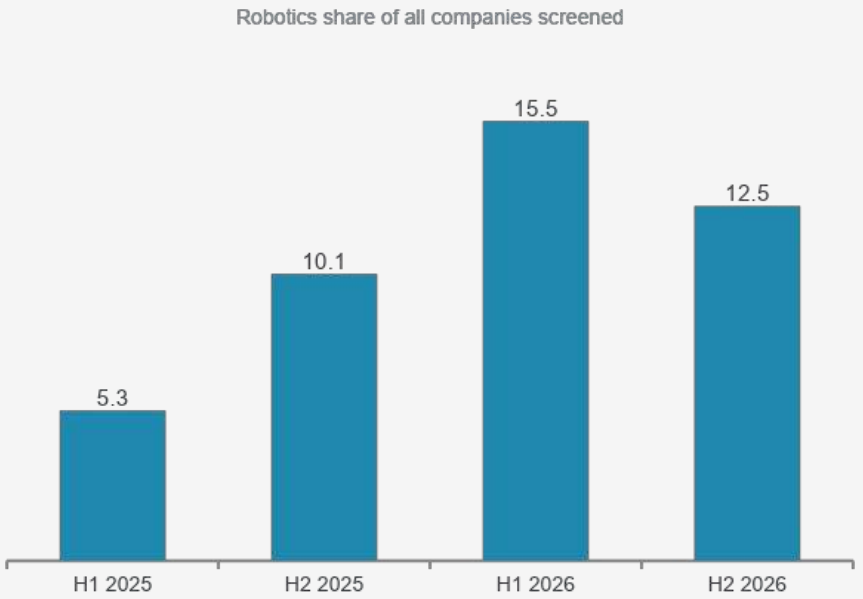
25x

ellipsis

Source: DeepTech Asia 2026

European Clusters: Deep Tech Zurich/Munich





87%

European; 51% from Switzerland, Germany, Austria

Source: ellipsis deal pipeline,1 Jan 2025 – 24 Oct 2026

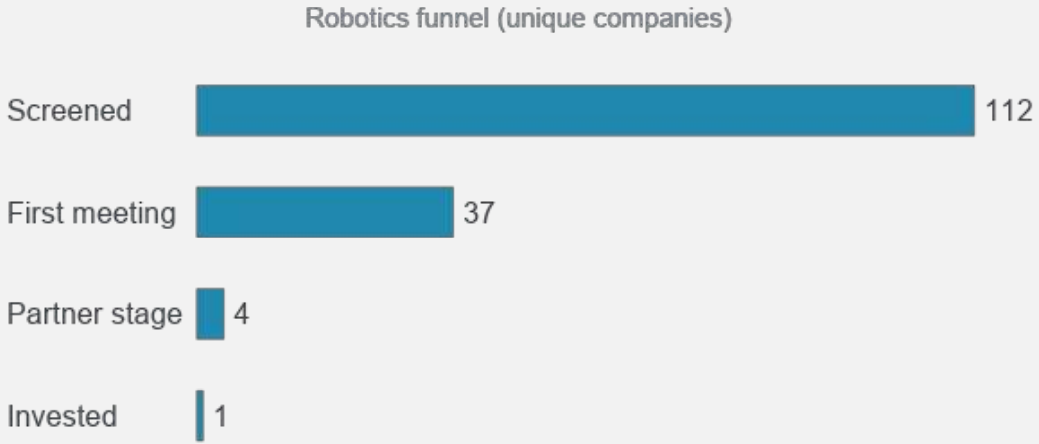
Robotics Deal Flow, in Numbers

954
companies screened since Jan 2025

112
robotics & physical AI (11.7% of all flow)

33%
of robotics companies get a first meeting

1 in 112
robotics companies we invested in



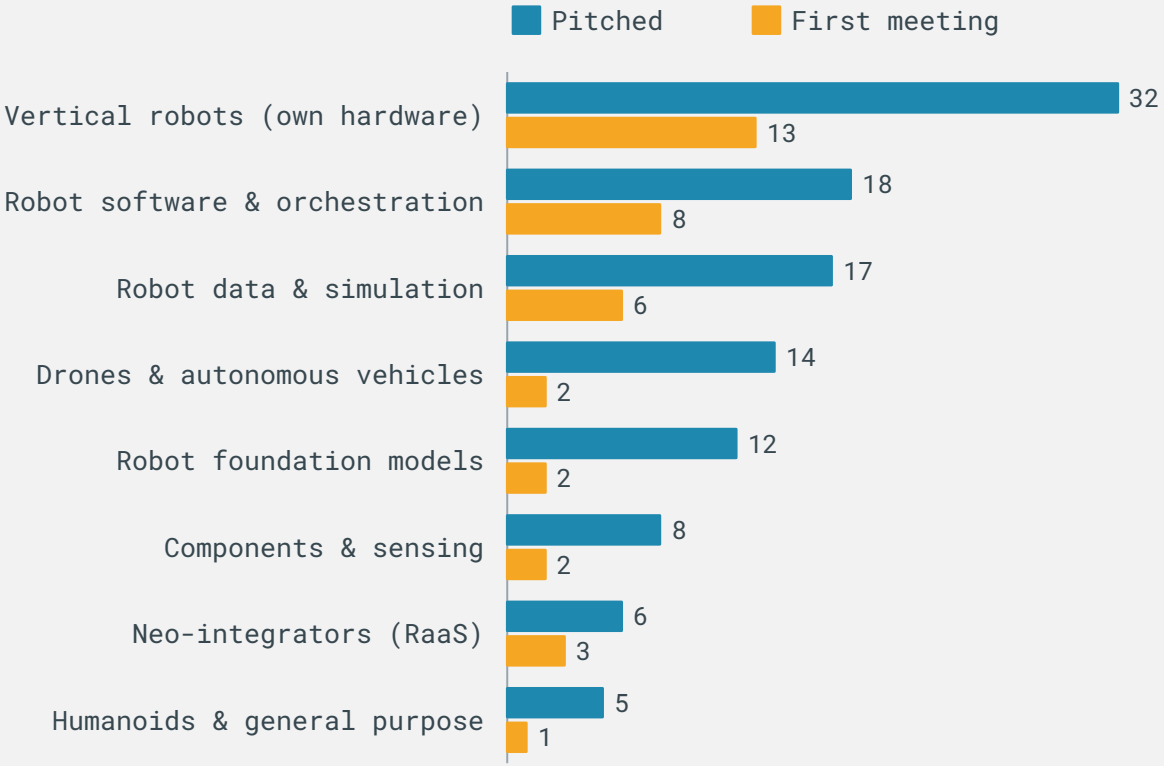
Every robotics deck is read and screened against the thesis.

4 reached a partner call; 15 more are still in our pipeline today.

Selectivity is the product. We say no early and with a reason.

Source: ellipsis Olympia pipeline, deals logged 1 Jan 2025 – 24 Oct 2026

What Robotics Founders Pitch Us



#1: Vertical robots (own hardware)

29% of robotics decks. Founders building their own robot for one job still dominate the flow.

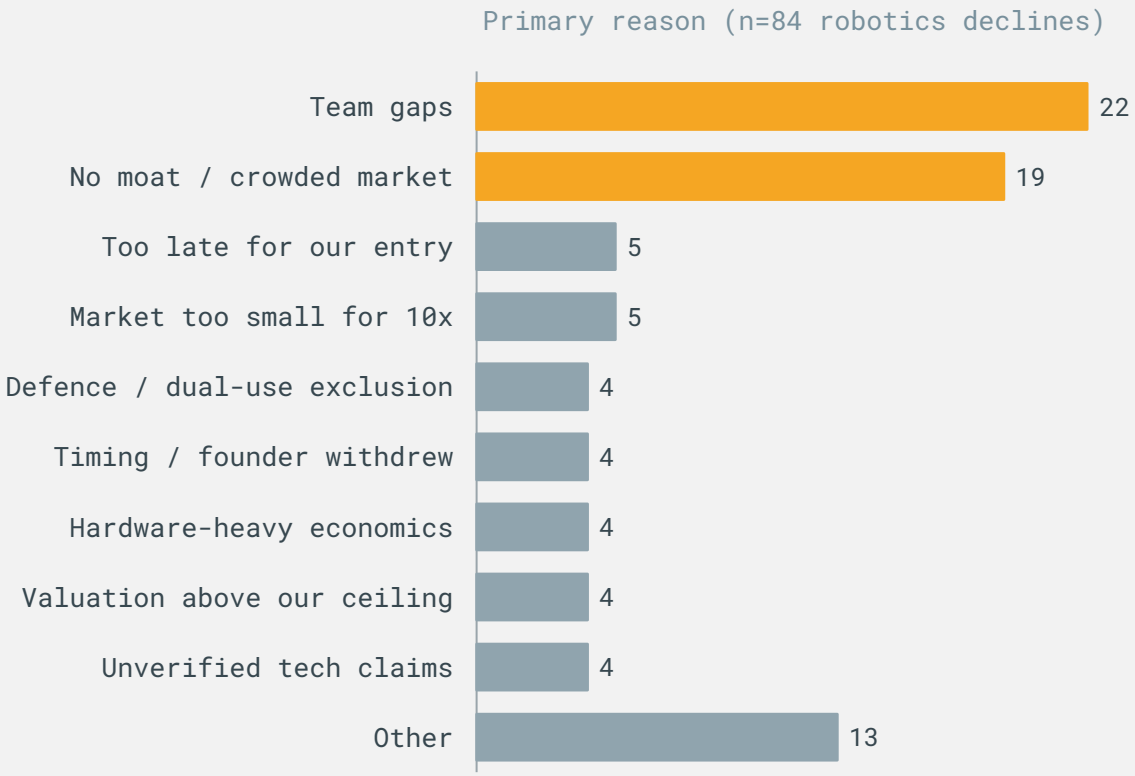
Where we lean in

Robot software & orchestration converts best to a meeting (44%) = software margins on top of hardware others build.

Drones and humanoids rarely move past the deck.

Source: ellipsis Olympia pipeline, deals logged 1 Jan 2025 – 24 Oct 2026

Why We Say No



49%

of robotics declines down to:

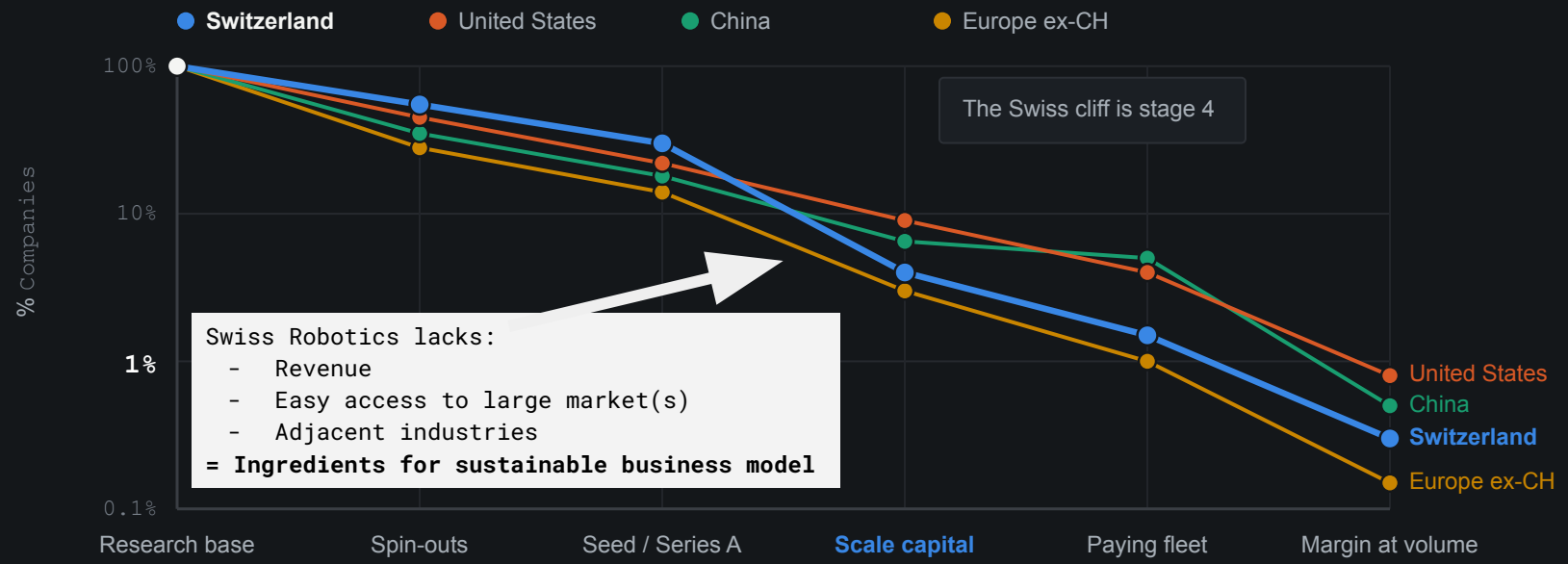
- team gaps
- no moat / crowded market.

Price and stage decide only 14%. Our bar is quality.

Source: ellipsis Olympia pipeline, deals logged 1 Jan 2025 – 24 Oct 2026

THE LEAKY INNOVATION PIPELINE

Every ecosystem leaks. They leak at different stages.

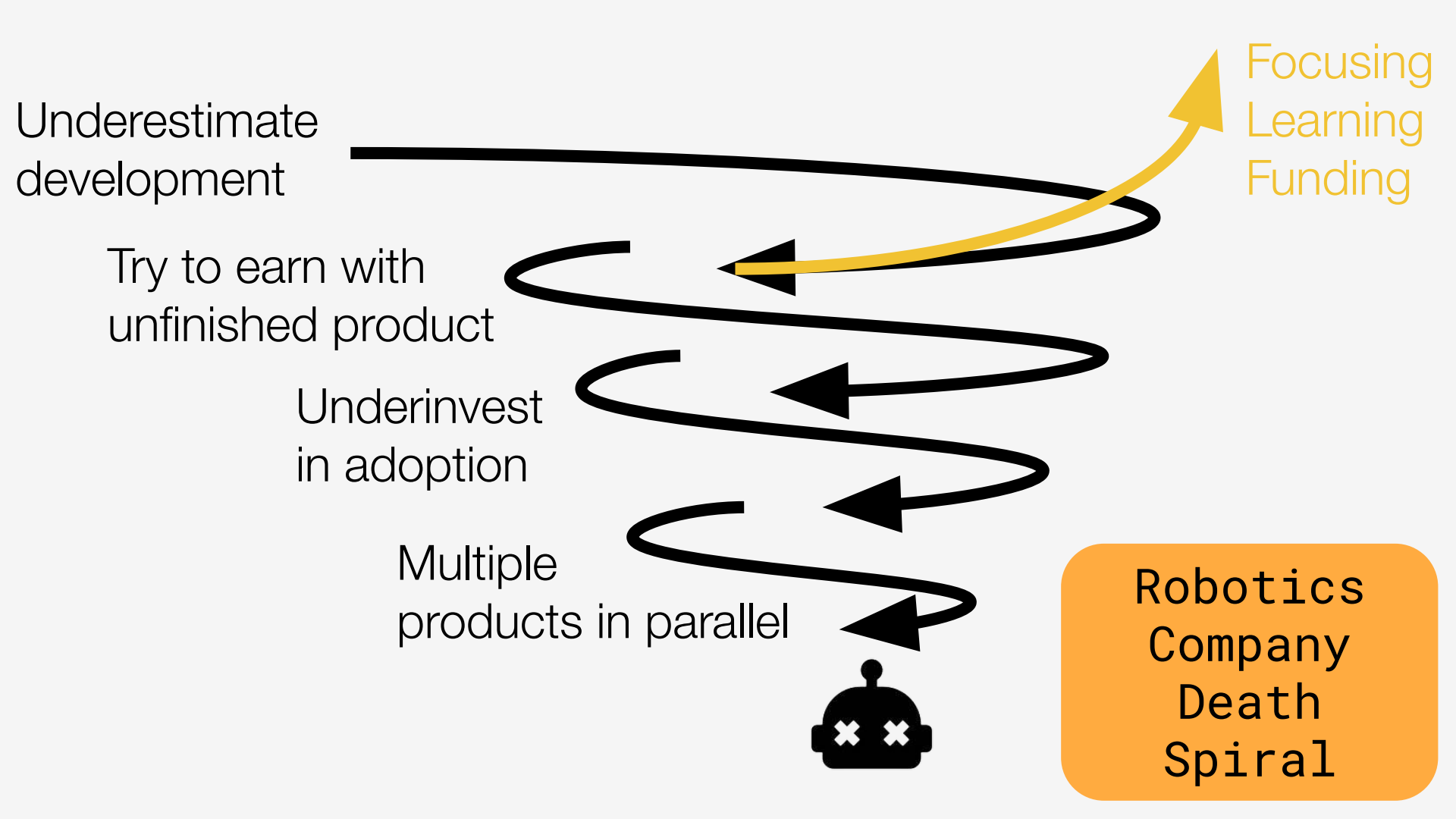


Biggest Swiss round 2026: $200M (Gravis) · Biggest US: $1.75bn (Saronic) · Biggest German: $1.4bn (Neura)

Global robotics VC 2026 YTD: ca. $20bn



Europe’s **margin of error is smaller**.
Product and company mistakes compound.

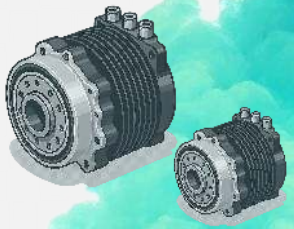

Underestimate development
Try to earn with unfinished product
Underinvest in adoption
Multiple products in parallel
Focusing
Learning
Funding
Robotics Company Death Spiral

Strategy fails when leaders confused ambition with readiness

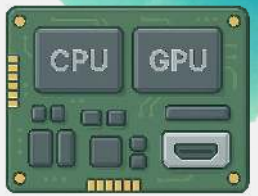
Robotics & AI

Complexity, tangible

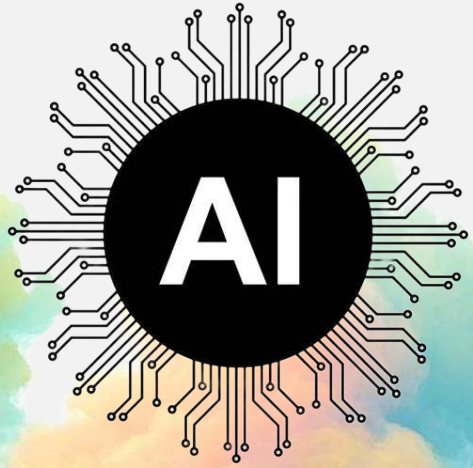
Why the excitement?





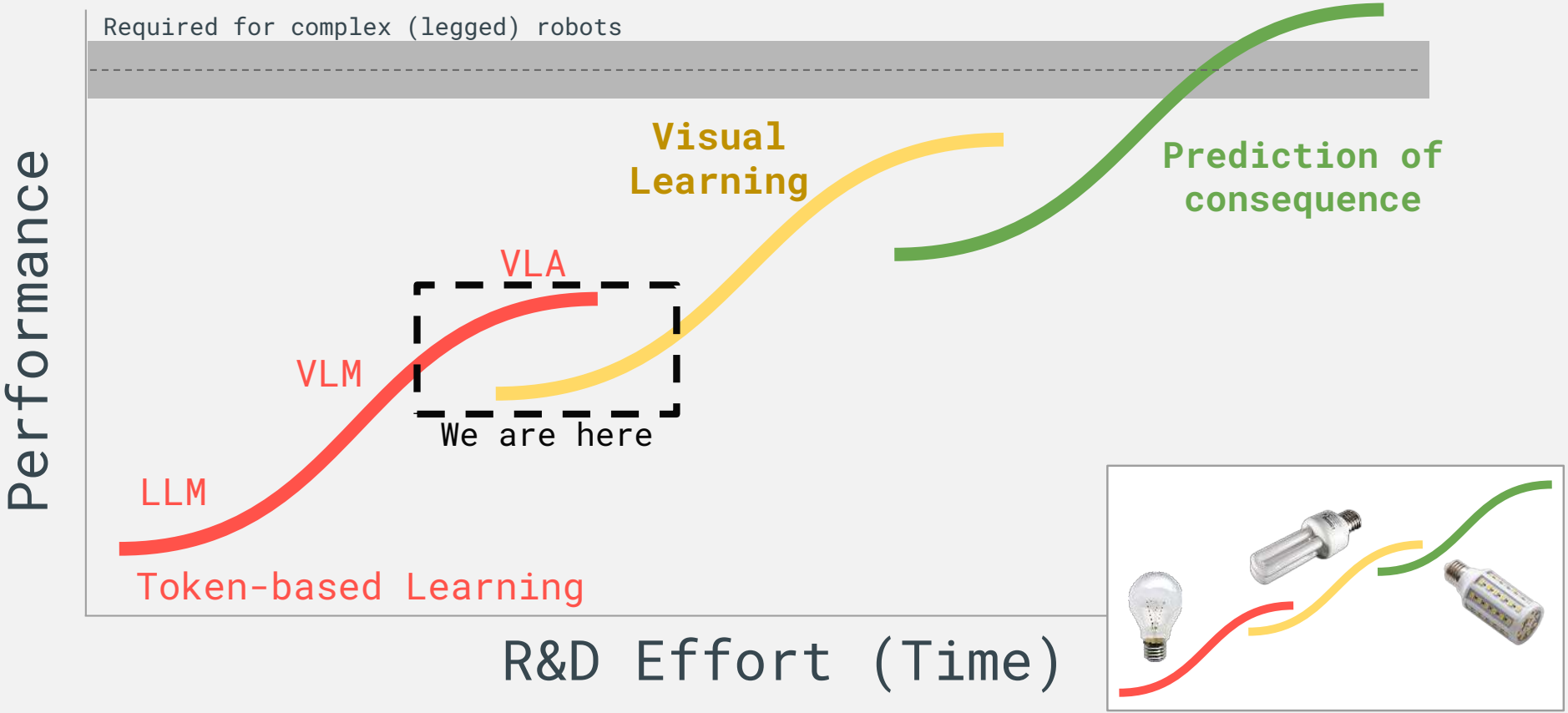




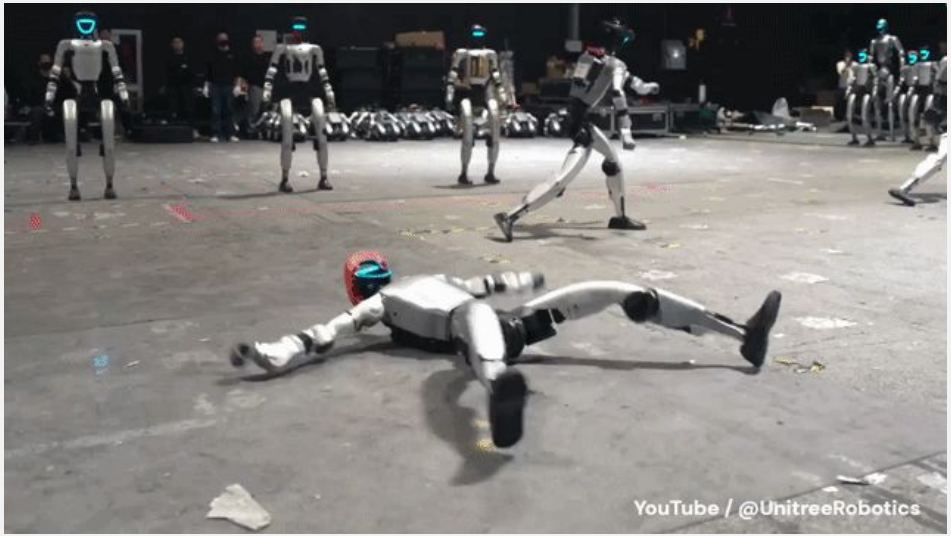




AI: Tipping Point of new Technology Window



Aren’t robots already incredible?

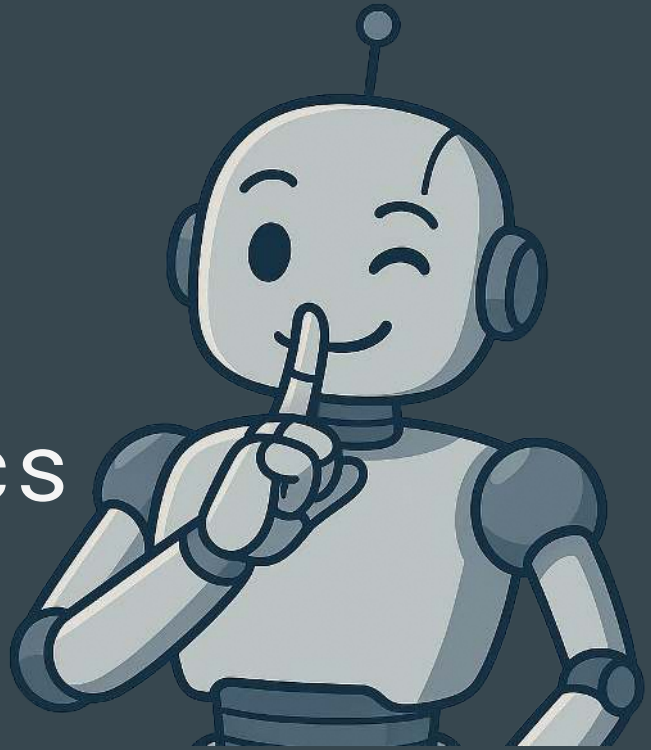


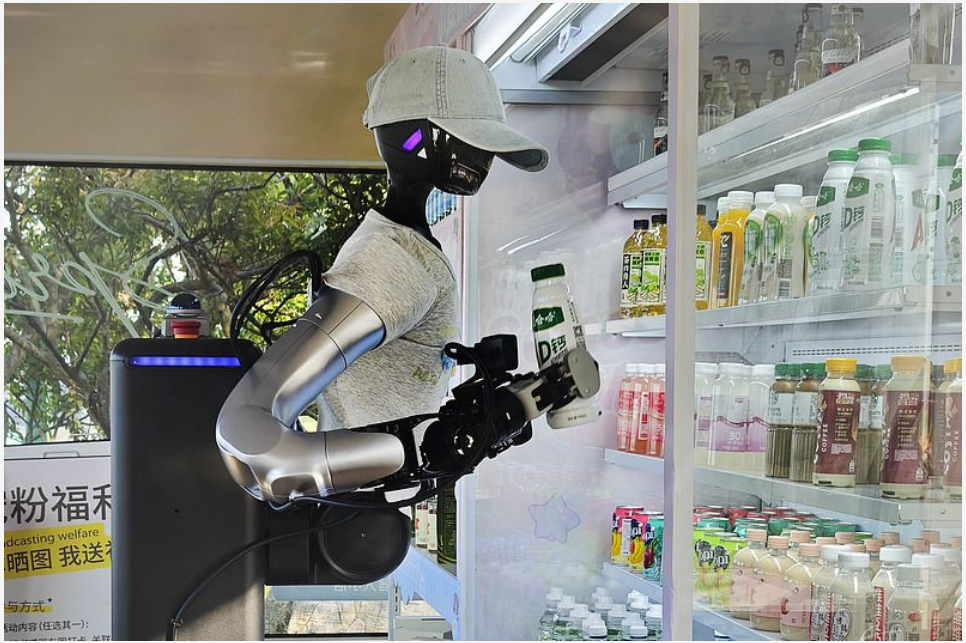


Valuable in Entertainment only

Movement ≠ Work

There is still a massive “hidden” complexity in robotics & robotics companies.





Galbot Store



Where is the complexity?

Complexity MASSIVELY shifts with:

- Unstructured environments
- The job / use case
- Standards e.g. explosion proof















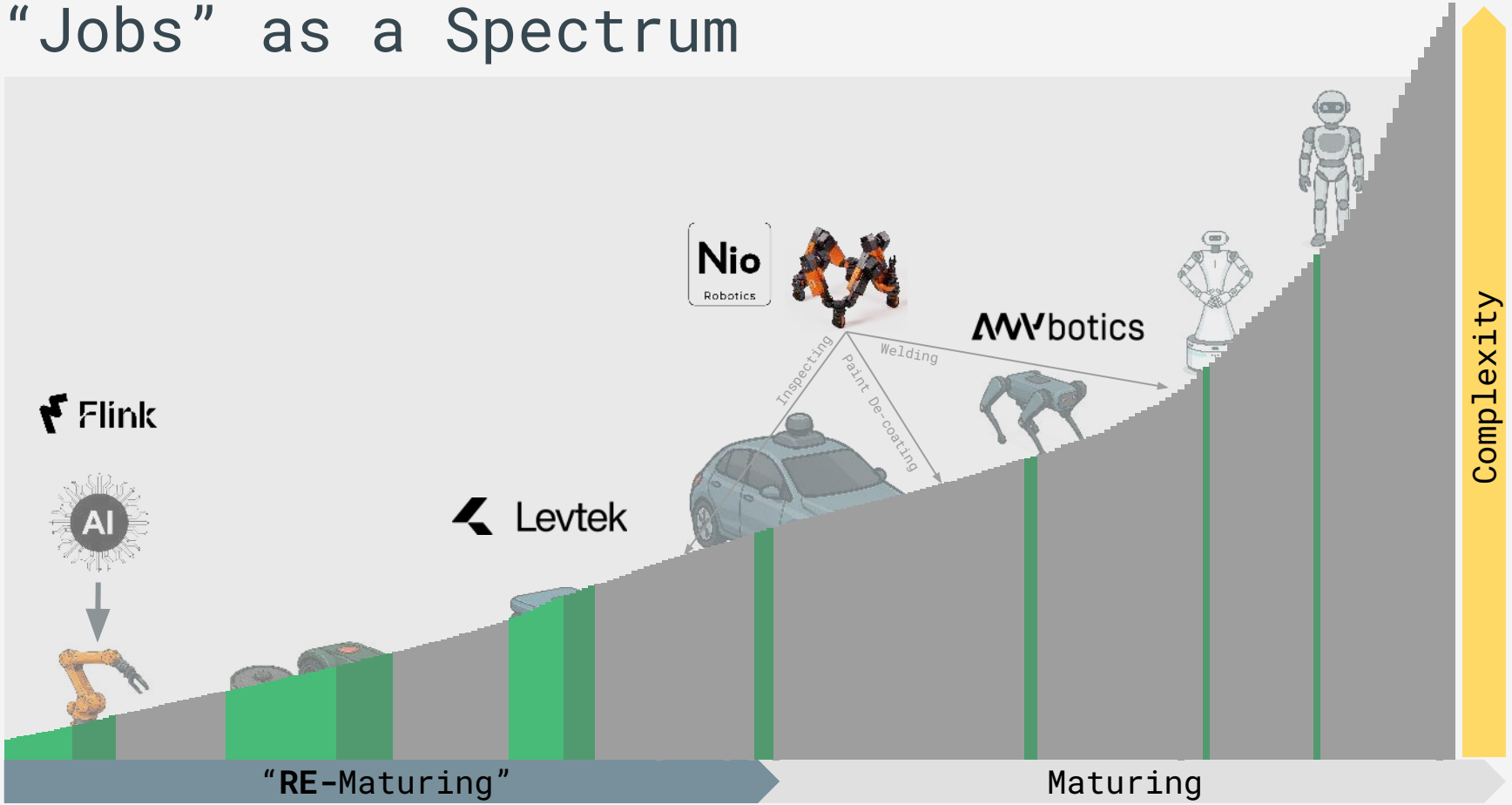


Complexity

"**RE**-Maturing"

Maturing

“Jobs” as a Spectrum



Case Study

Robotic transport of people
and goods in large facilities



Levtek

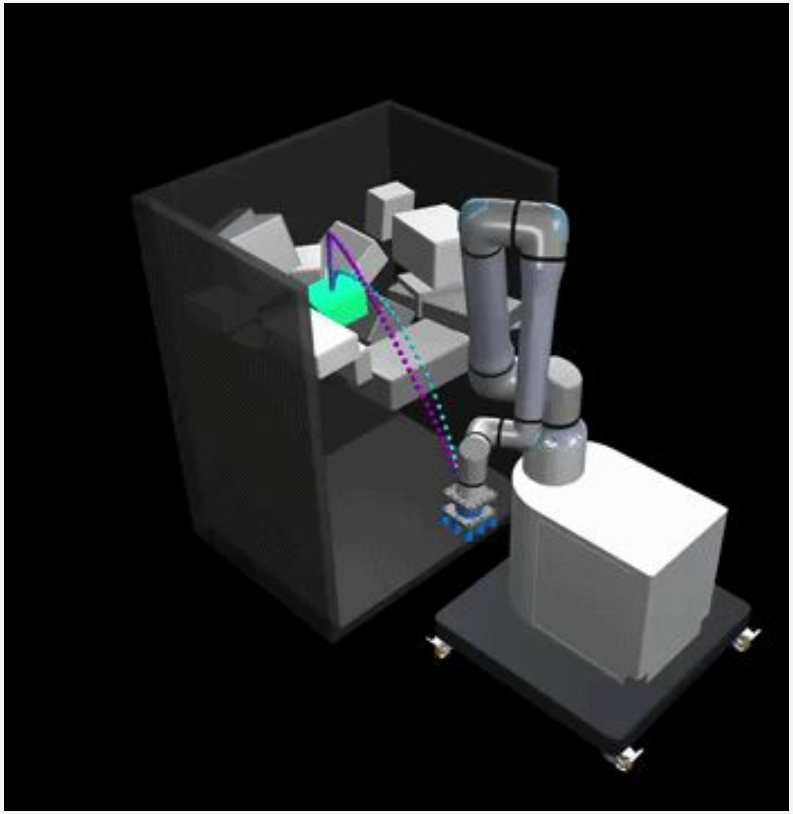

Vehicle mode
Collaborative mode
Autonomous mode

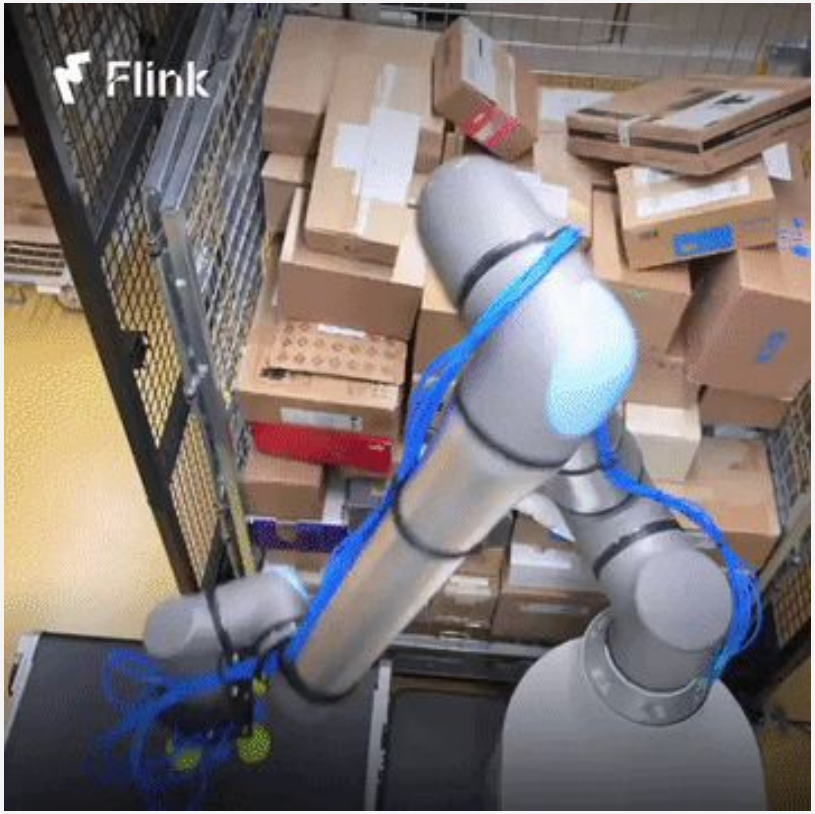
Case Study

Logistics: Singularization



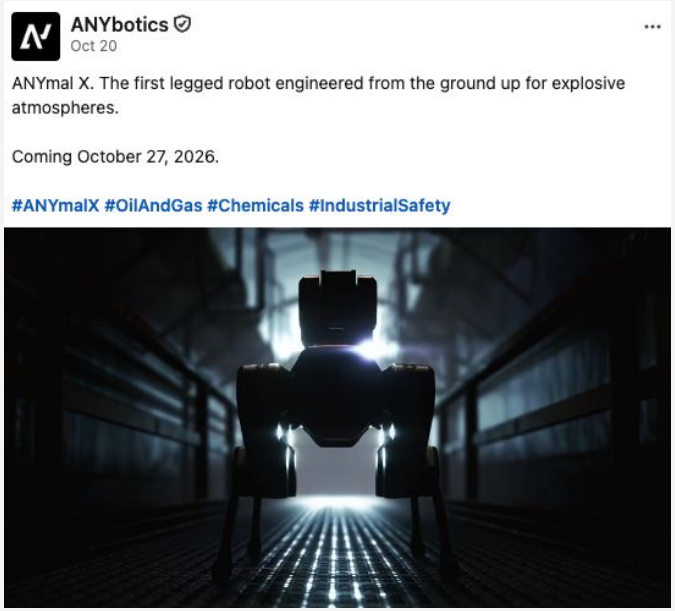
Robots doing work “intelligently”





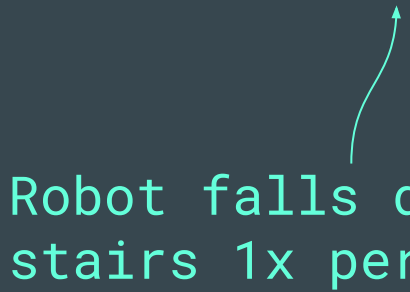
Still incomplete / impossible?

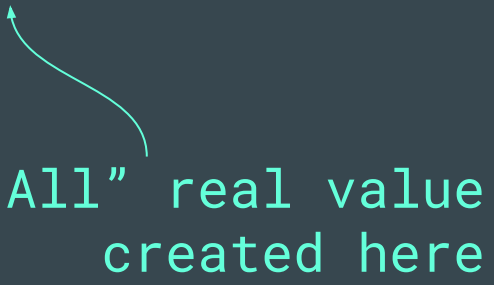
1. **Understanding surroundings**
2. **High-level reasoning & planning**
3. **Truly reliable learning transfer**
4. **Complex (mobile) Manipulation**
5. **Dexterous hands & tactile sensing**
6. **Power for long-term autonomous operation**
7. ~~**Multi floor operation with certification e.g. ATEX**~~ ?



99% is not enough

99% vs 99.999%





Case Study

Effort to Achieve 99.9+%

AMY botics

Examples of 99.9%



ANYbotics ANYmal

06.2021 - 95%

2.5 Years

02.2024 - 99.9%




Achtung heiss!
Keep 2 m distance
Stand clear when indicator light is on
ANYbotics

Efficiency at Scale: Vigier Ciment

A 150-year-old cement plant's 16-month journey

$660,000
Avoided Shutdown Costs

33,000
Inspections

450
Inspection Points

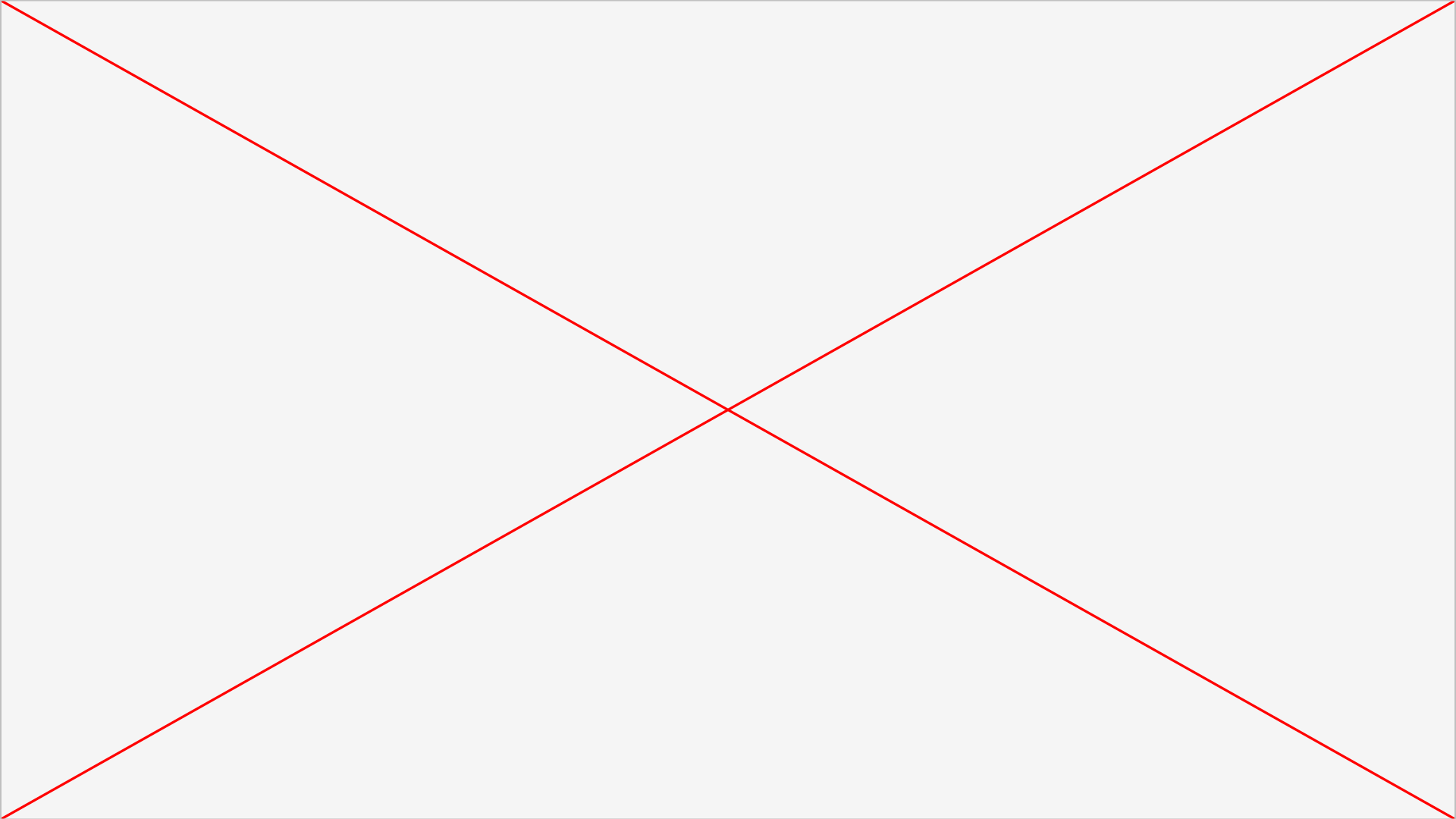
3 Mills
Operational Capacity

6 Floors
Facility Coverage



Key Operational Results

- ✓ Caught a **cracked foundation** before it forced a shutdown
- ✓ Found an **overheating bearing** early enough to fix
- ✓ Surfaced **energy and CO_2 losses** from “invisible” filter leaks



Trends vs Hype

Durable differentiation in Robotics & AI

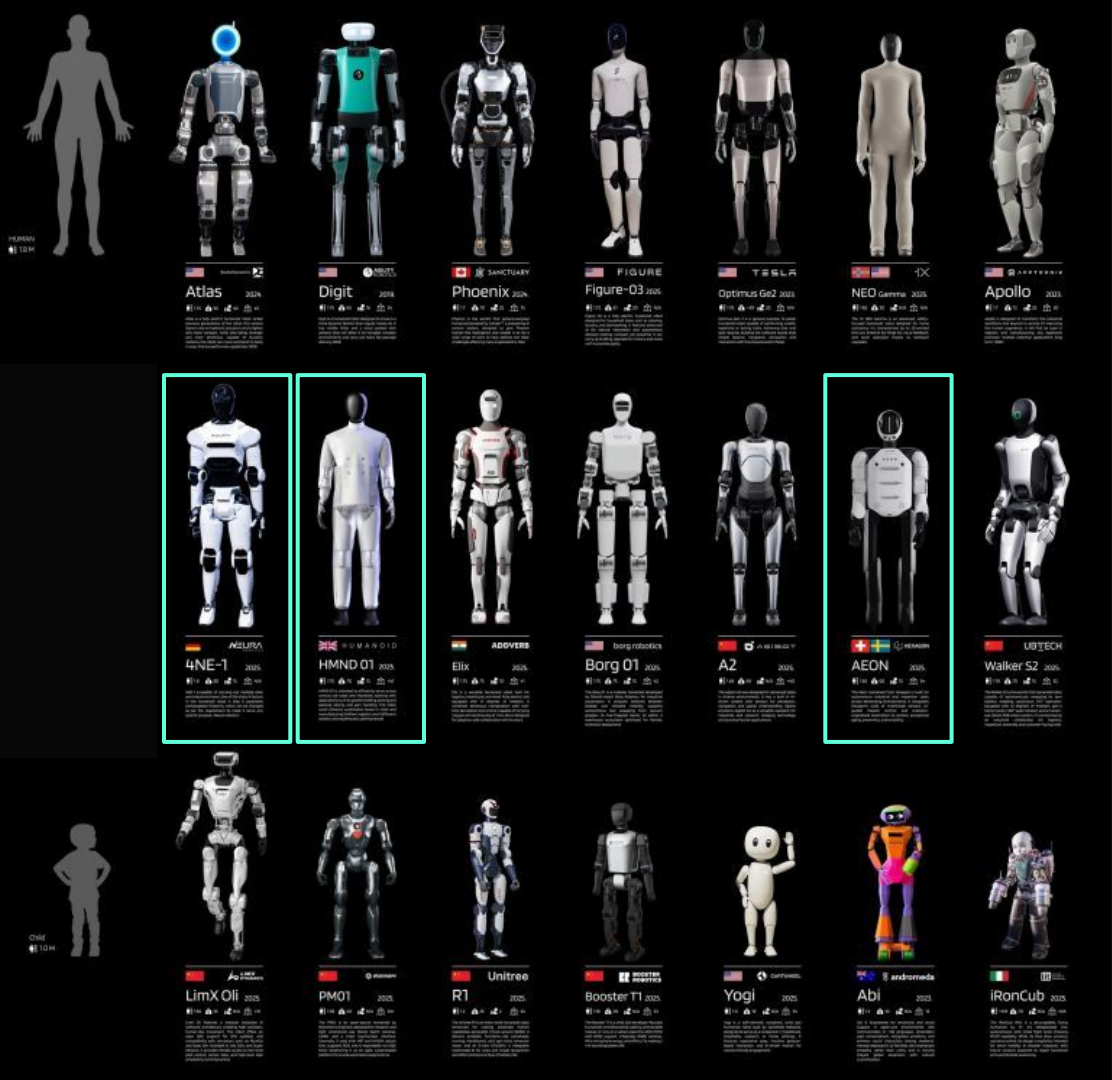
Humanoids

Trend or Hype?

>100 companies building Humanoids

ALL need multiple breakthroughs

< 10 reached “scaled” pilots



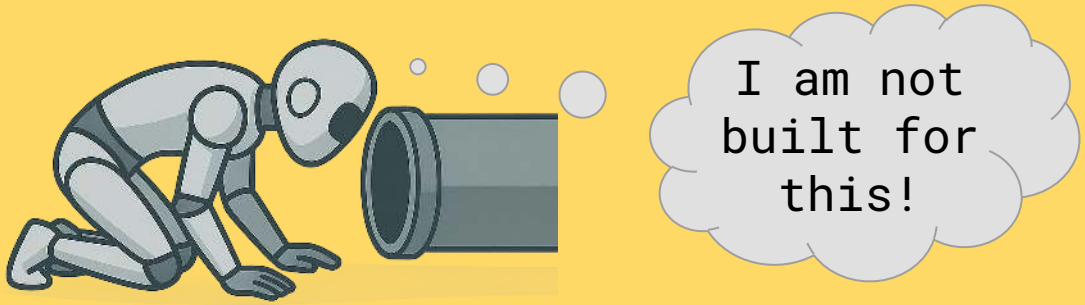
Job-Specific Robots > Humanoids





Hype: Humanoids everywhere, soon!

Prediction: Many job-specific robots and humanoids! Long way until real humanoid value. Humanoids not the most intelligent.



Sell the dream before finishing the product





Figure 03 & Helix (February 2026)

Job-Specific Robots > Humanoids

Material Loading/Unloading → Material Transportation → Welding → Assembly → Final Inspection











Trend: Companies are commercializing complexer robotics systems; many are rushing.

Prediction: A surprising number of companies will “soon” fail.

- Products won’t fulfill promise.
- Business models won’t work.
- Funding will stop for many.

Robotic Hands

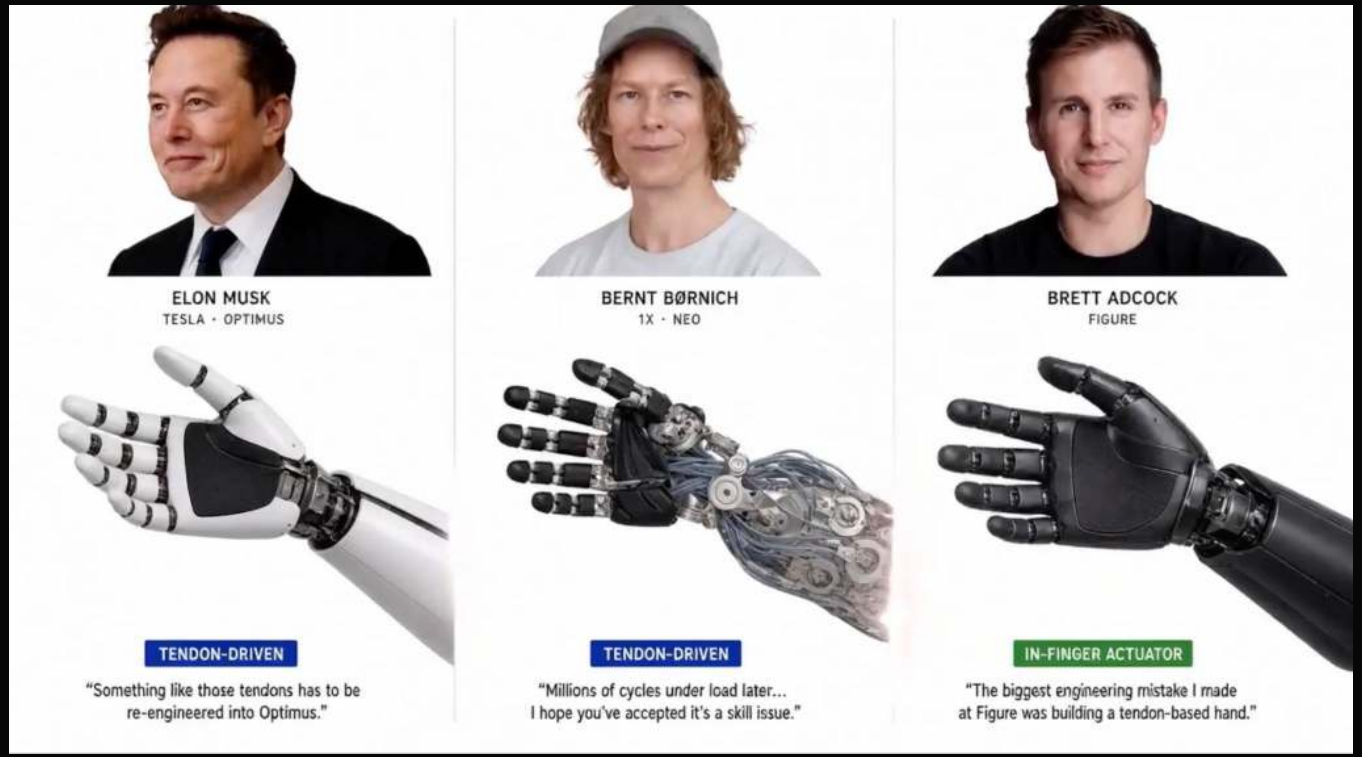
Trend or Hype?

Top 10 Robot Hand Makers

Dexterous Robot Hands

COMPANY	HQ	ROBOT HAND
AGIBOT	Shanghai, China	AGIBOT Hand
LINKERBOT	China	Linkerbot Hand
INSPIRE-ROBOTS	Beijing, China	RH56 Series Hand
SHADOW ROBOT	London, United Kingdom	Shadow Dexterous Hand
WONIK ROBOTICS	Anyang, South Korea	Allegro Hand
UNITREE ROBOTICS	China	Dex5-1 Hand
TESLA	Austin, Texas, USA	Optimus Hand
SANCTUARY AI	Canada	MerPhi Hand
CLONE ROBOTICS	Poland	Clone Hand
SCHUNK	Lauffen am Neckar, Germany	SVH 5-Finger Hand

Data as of June 2026



Case Study

Direct from video learning, dual arm robot

mimic


Autonomous end-to-end policy / 5x speed
mimic

Hype: Hands will one day be needed. However, their importance is currently over exaggerated.

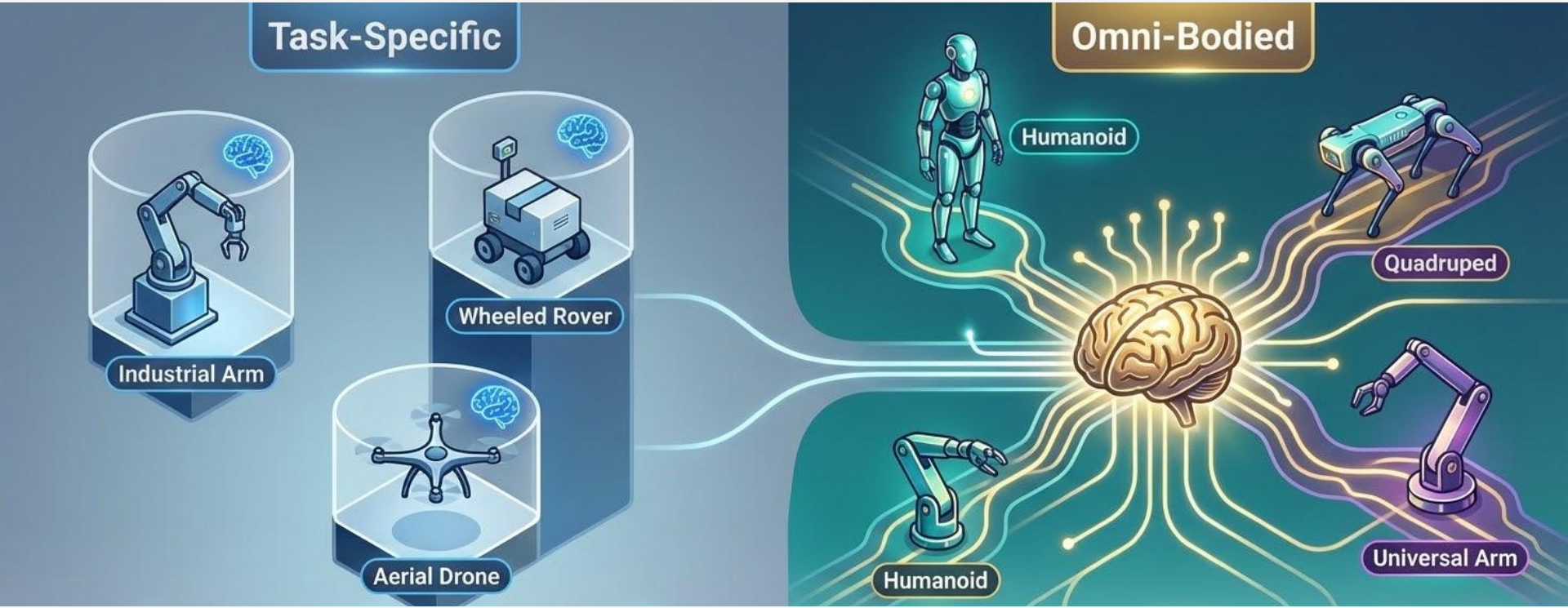
Prediction: Many jobs will be solved using specific end effectors.

Hands will be useful on non-humanoids first.

Robotics “One Brain”

Trend or Hype?

Concept: Embodied Robotics Intelligence



Robotics Intelligence Companies

USA

Physical Intelligence

Skild AI

Figure AI

Tesla

Field AI

NVIDIA GR00T

Google DeepMind

Europe

NEURA Robotics

sereact

Genesis AI

Flexion Robotics

Bleu Robotics

Binabik AI

China

AgiBot

Galbot

Galaxea AI

X Square Robot

Unitree

UBtech

Alibaba DAMO

Spirit AI

Matrix Superintelligence

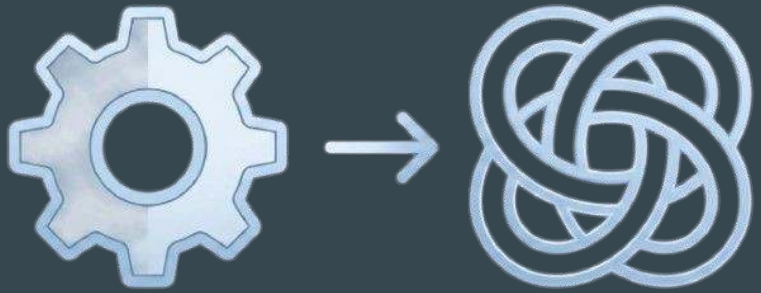
Hype: Companies (& investors) losing their minds over a “one brain” robotics intelligence

Prediction: This will advance technology but companies will struggle with business models

- Hardware (& testing) limitations
- Standards, safety, liability
- End-to-end robotics companies have solutions

Complexity

Understanding and rethinking



Developing a **complex product** increases the risk of becoming a **complex company**.

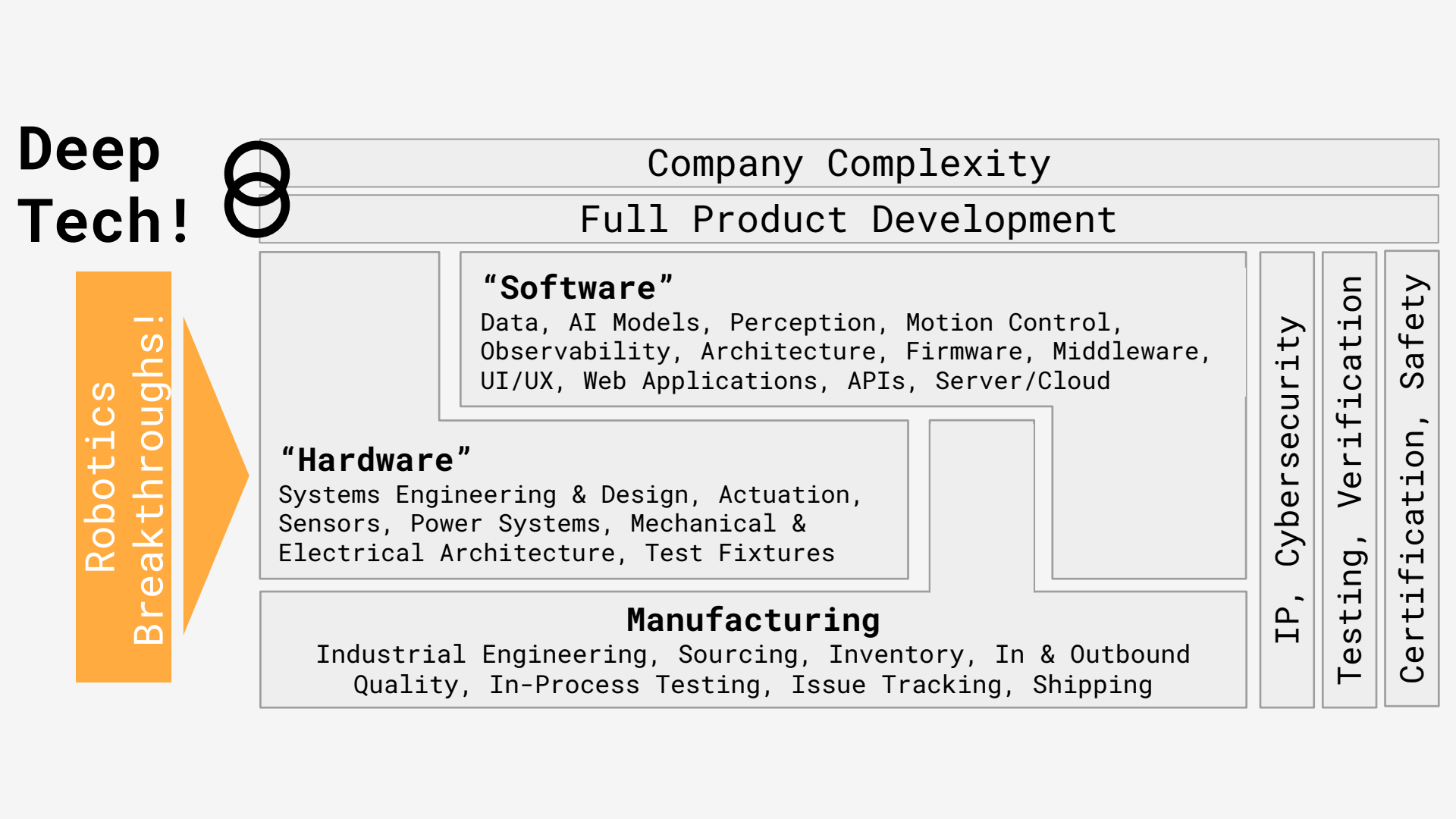
Pure Software

Company Complexity

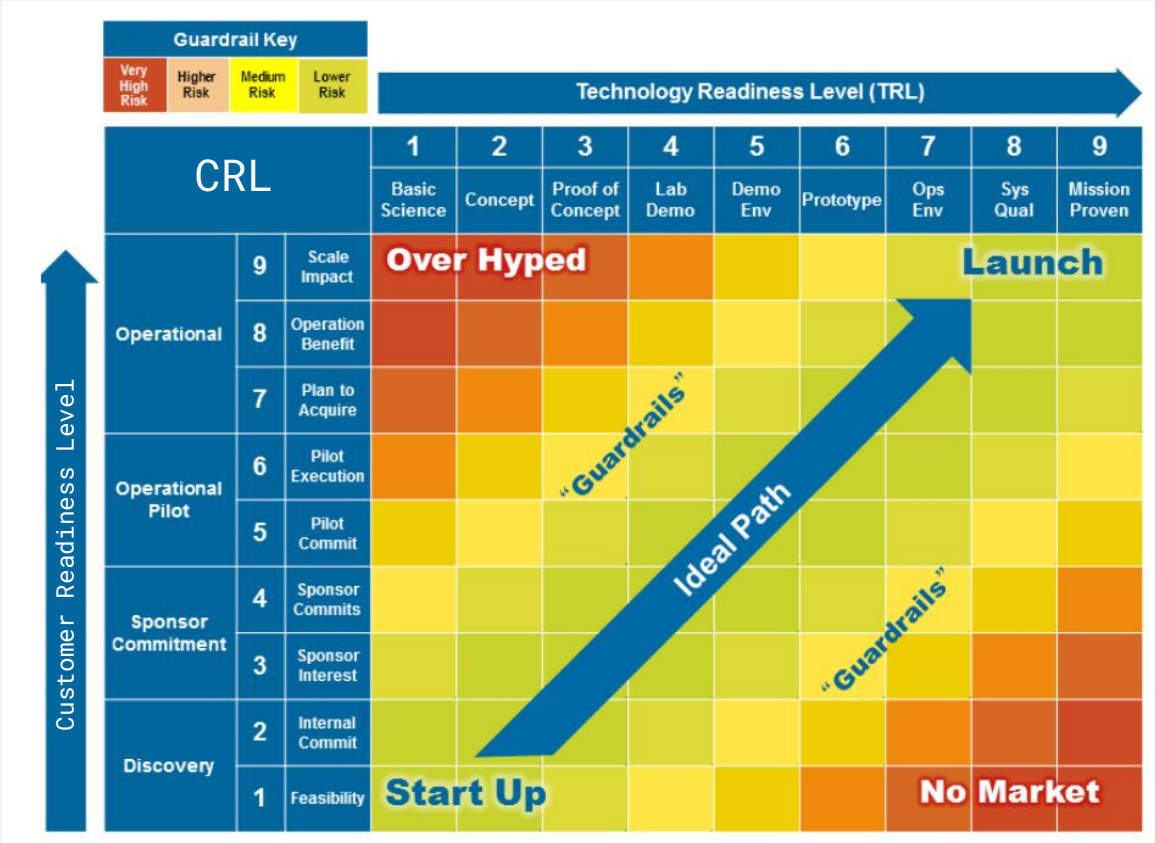
Product Development

“**Software**” - Data, AI Models, Software Architecture, UI/UX, Web Applications, APIs, Server/Cloud

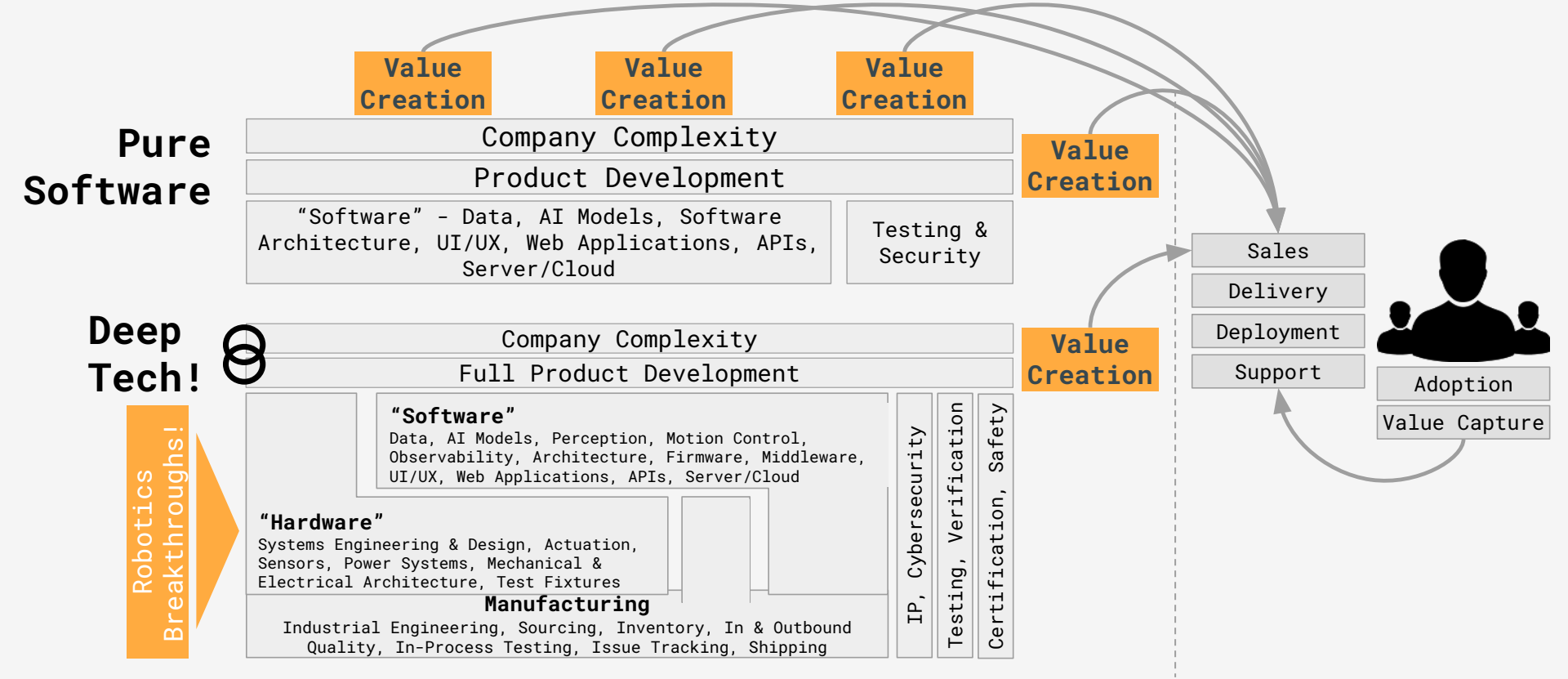
Testing & Security


Deep Tech!
Company Complexity
Full Product Development
Robotics Breakthroughs!
“Software”
Data, AI Models, Perception, Motion Control, Observability, Architecture, Firmware, Middleware, UI/UX, Web Applications, APIs, Server/Cloud
“Hardware”
Systems Engineering & Design, Actuation, Sensors, Power Systems, Mechanical & Electrical Architecture, Test Fixtures
Manufacturing
Industrial Engineering, Sourcing, Inventory, In & Outbound Quality, In-Process Testing, Issue Tracking, Shipping
IP, Cybersecurity
Testing, Verification
Certification, Safety

Technology & Customer Readiness Level



Robotics: Only Full Product = Real Revenue

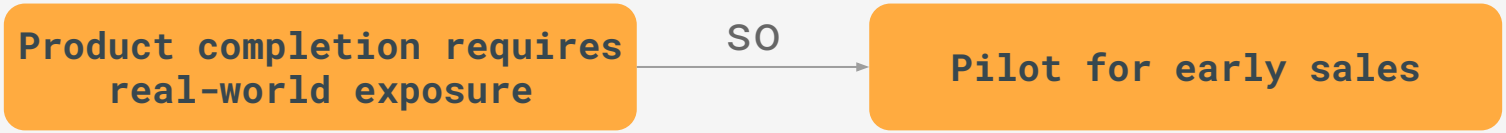


Robotics Scaling

Sell Like Hell

Build Great Tech

Everybody knows…



Almost nobody knows how to pilot well at a company level!

Robotics Scaling: Smarter Staging!

Performative Commercialization

Structural Commercialization

Product-minded business development

Conscious market interaction

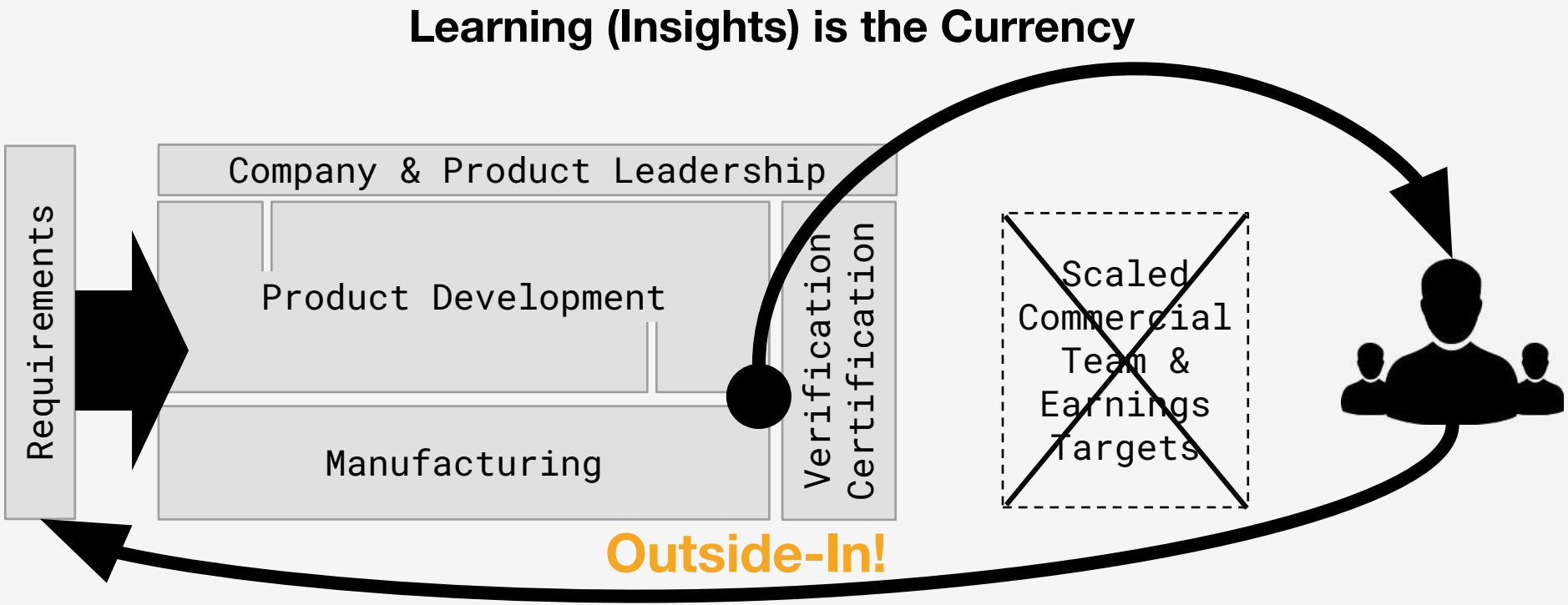
Partner customers

Learning goals & mechanisms

Build Great Tech

Article

Learn Over Earn





- **Push Product Beyond Limits Known Limits**. Unknown scopes, use cases, new conditions (duration, temperature, lighting)
- **Every Issue Becomes INTERNAL Test.** Technology automation and "human" automation = easy to manually capture issue data.
- **Outside-In Performance Metrics.** Metrics that show if the product is working in the eyes of the customer.
- **Design for Manufacturability DfM (ENG).** Industrialization Engineer with HW to finalize designs, early.
- **Strong Systems Engineering (ENG).** Minds that pull the entire system complexity together, help whole system to converge to higher performance thresholds, toward DfM.
- **Robust Internal Test Suite (ENG)**
  - Fully digitized & automatable requirements & specifications
  - Automated software testing
  - Automated hardware-in-loop
  - Physical testing stations and cases
- **Common Issue / Deliverable Rating.** Product Issues and Product Roadmap Items use same system (e.g. Cost of Delay, WSJF) to compare.
- **Everyone Learns to Deploy.** We become experts of setting up our product and partners for success.
- **Tools Exist and Trained to Learn, Fast.** We practice and achieve fast data collection, insight generation and aggregation.
- **Engineers don't self-verify.** 3:1 or min 5:1 ratio Engineers to Verification/Quality Roles, a clear Quality Lead



Knowledgeable
Leader or Investor


Robotics: The Hidden Complexity
and the ellipsis Venture edge