

Living Cyborg Swarms.

Operating beyond limits.



The capability gap. What ISR needs next.

Five attributes current architecture cannot deliver together. Adversary capabilities are eroding the gap.

MASS	MOBILITY	SENSORS	SIGNATURE	EMBODIED AI
Mass autonomous systems instead of single platforms.	Biological-scale mobility instead of mechanical constraints.	Dense micro-sensor networks instead of heavy hardware.	Low-signature systems instead of visible, targetable assets.	Embodied AI that can scale faster than industrial robotics.

- > A new operating layer for physical-world intelligence — close-access, persistent, attritable at biological scale.

SWARM makes living organisms programmable.

Neural interface

Turn-by-turn directional control of locomotion.

Backpack

Compute, energy, encrypted comms. 15g total payload.

Modular Payload

Video, audio, mmWave radar, chemical sensors. Mission-specific.

SWARM OS

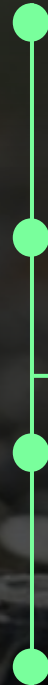
Bio-control, swarm autonomy, mission intelligence. C2 integration.

Today at TRL 5:

<\$100 per cyborg.

1,200+ cyborgs precision-controlled.

10,000 insects bred.



The only biorobotics system in the field.



BREED

Container breeding.

In-country sovereign breeding. Scalable. No cross-border risk.

EQUIP

Backpack mounting.

Robotic arms mount backpacks at the container. High throughput.

LOGISTICS

Standard boxes for swarms.

Pre-configured, shelf-ready, replenished on schedule.

DEPLOY

Field-ready mission kits.

Transport-ready kits. Deployed in minutes.

OPERATE

SWARM OS.

Mission intent in. Sensor data out. Integrates with existing systems.

- > Units get field ready swarm capability boxes.
- > Scaling logic: sovereign breeding, not factories.

12 months from founding to contracted traction.

VELOCITY

- OCT 24 ● **Founded**
Germany
- JAN 25 ● **1st employee**
Started operations
- FEB 25 ● **Public Presentation**
Munich Security Conference
- JUL 25 ● **1st cyborg swarm**
Autonomous swarm demo
- OCT 25 ● **1st contract signed**
German Army (Bundeswehr)
- DEC 25 ● **2nd contract signed**
Danish Special Forces
- APR 26 ● **Largest budget**
Ministry of Defense (UK)

TRACTION

Customer	Status
UK Ministry of Defense	Budget approved
German Army (Bundeswehr)	In execution
Danish Special Forces	In execution
Disaster Response (@fire)	In execution
French Counter Terror Unit	In procurement
German Intelligence Service	In procurement

\$890k

NATO Customers

1,200+

Cyborgs produced

\$9.5M

Pipeline · 77 deals

Bundeswehr case: from pilot to multi-unit rollout.

SCOPE:

Reconnaissance in blind zones

Digital tripwire (persistent sensor alert)

Swarm convergence at a designated point

EXPANDED REQUIREMENTS:

Deployment via unmanned systems

High-altitude drop from 9,000m

Tactical Payload Delivery

Acoustic classification

Next: Multi-unit roll-out Q3-Q4 2026



SWARM creates a new capability.

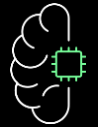
CAPABILITY	SWARM	AERIAL ROBOTS	GROUND ROBOTS
Stealth	High, nature	Low, rotor noise + thermal	Low, mechanical noise + thermal
Mobility	Excellent in any terrain	Airspace-dependent	Mechanical-limited
Endurance	Hours–weeks	Minutes-hours	Minutes-hours
Scaling	Breeding	Factories · high CapEx	Factories · high CapEx
Operational Cost	Low, loss-tolerant	High-cost, ops-limited	Very high-cost, deployment-heavy
Density	Area saturation	Area sweep	Path crawl

One stack. Many domains.

SWARM STACK

CARRIERS

Current focus



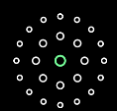
Bio-Control



SWARM OS



Scaled Breeding



Mission Data

GROUND



SEA



AIR



+ additional robotic carriers integrate if ready

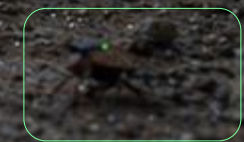
SWARM Biotactics

USE CASES.

Nine deployable scenarios across defense, security and crisis response.

Battlefield ISR.

Swarms saturate decisive points within a brigade AOR — adversary command nodes, key intersections, fortified positions, suspected staging areas — sustaining real-time intelligence inside contested terrain where conventional UAS are degraded by air defense and EW and satellite revisit is too slow.



Hardened and underground facility reconnaissance.

Cyborgs enter through gaps inaccessible to any unmanned platform, mapping interior layout, activity, and ventilation from inside tunnels, bunkers and hardened facilities. Loss-tolerant by architecture: unit failure does not degrade the mission.



CBRN reconnaissance and attribution.

Close-access sensing of radiological signatures, chemical leak indicators and environmental sampling — without committing personnel, with minimal attributable footprint. Supports proliferation monitoring, weapons-program characterization and post-event attribution.



Strategic indications and warning.

Persistent I&W across mobilization sites, leadership compounds, dispersal locations and network nodes of interest. Continuous interior and perimeter intelligence at fidelity overhead and signals collection cannot match — supporting J2 and CCMD-level strategic warning.



Littoral and pre-landing reconnaissance.

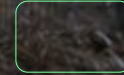
Producing the pre-landing picture across contested coastlines at amphibious-force scale — defenses, sensors, patrol routes, obstacles above the waterline. Cyborgs deploy via airdrop, vessel or UAV; the aqua-platform variant extends mapping subsurface.

Force protection across forward posture.

Saturation sensor coverage at small forward sites, distributed nodes and remote operating locations — simultaneously, across a theater. Detects and classifies foot, vehicle and small UAS intrusion in real time, integrated to NATO-standard C2.

Border and area-denial saturation.

Continuous surveillance of strategic borders, denial zones and contested frontiers at force scale. Biological sensor network detects every crossing, classifies intent — deployed in waves matched to platform endurance, sustaining coverage indefinitely.



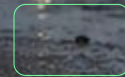
Resilient mesh comms in denied environments.

A distributed encrypted relay across urban canyons, subterranean spaces, building interiors and isolated units beyond line-of-sight. Each node is expendable; the network reconfigures around losses. Resilient last-mile connectivity in EW-saturated and physically obstructed environments.



Target marking and precision strike.

Cyborgs reach the target through gaps no standoff system can deliver covertly — placing miniaturized RF or acoustic beacons that confirm aimpoint for precision munitions or assault forces. Find-fix-finish against high-value mobile and hardened targets.



SWARM Biotactics

TECHNOLOGY.

Anatomy, autonomy, comms, neuro-stimulation, breeding and roadmap —
the technical foundations behind the missions.

Three-layer architecture. Each one keeps working when the layer above goes dark.

L1 LAYER 1	CARRIER Cyborg + backpack	FUNCTION Sensing · neural control · on-device AI · encrypted mesh.	UNDER DISCONNECTION Continues sensing, deciding and acting locally. No uplink required.
L2 LAYER 2	FIELD HUB Deployment box	FUNCTION Local coordinator · uplink gateway · data buffer.	UNDER DISCONNECTION Operates without backhaul. Buffers, syncs when restored. Connects to swarm.
L3 LAYER 3	SWARM OS Mission control	FUNCTION Mission intent · multi-carrier autonomy · sensor fusion · STANAG / Sitaware C2.	UNDER DISCONNECTION Improves performance when reachable. Not required for execution.

DECENTRALIZED BY DEFAULT

No single node, layer or facility whose failure stops the system.

INTELLIGENCE AT THE EDGE

Detection, classification and behavior change happen on the cyborg.

CARRIER-AGNOSTIC

L2/L3 unchanged across carrier types. Future carriers integrate as L1 drivers.

Designed for the hard case from the start. GPS-denied. RF-jammed. Infrastructure-free.

Communications. The swarm reaches as far as it spreads.

>1 km

INDIVIDUAL REACH (GEN 2)

10,000+

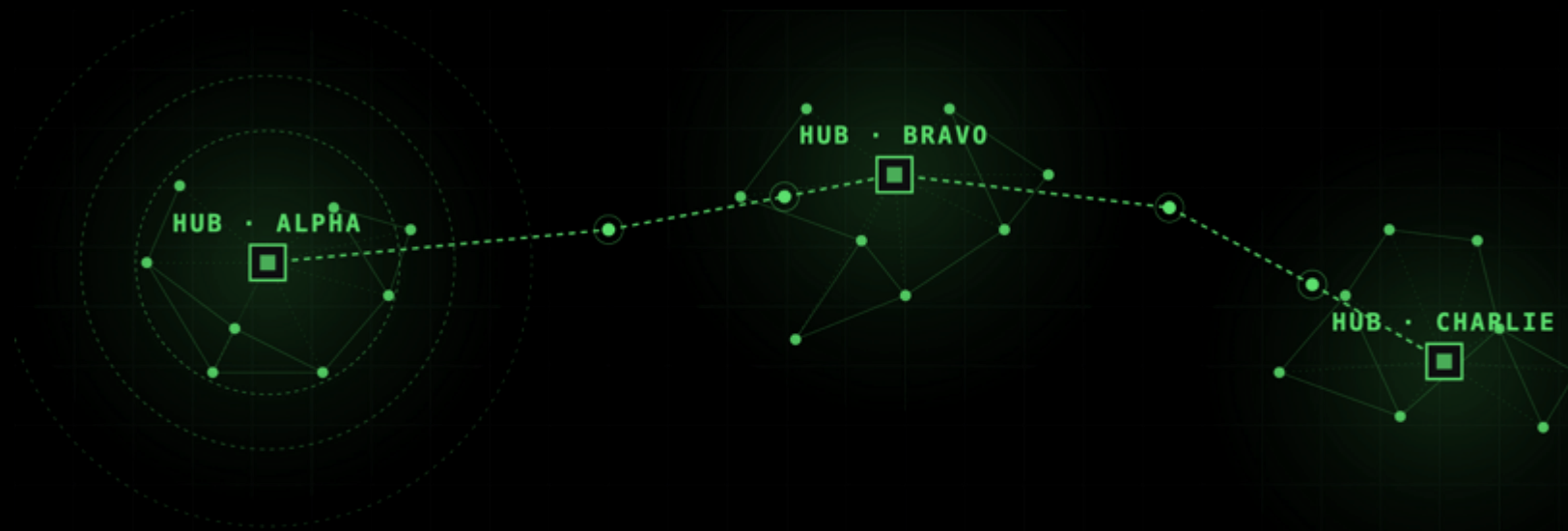
NODES PER MESH

No SPOF

NO CENTRAL COORDINATOR

UWB + sub-GHz

DUAL-RADIO



HUB-TO-CYBORG REACH

~600 m

GEN 1 · DEPLOYED

>1 km

GEN 2 · CURRENT

~3 km

GEN 3 · 2027

GOSSIP PROTOCOL · Cyborg <> Cyborg

Eventually-consistent. Each cyborg shares state with neighbors. Information propagates without a coordinator. Tolerant to node loss, latency and partition.

SCALE BY DEPLOYMENT

Add a hub, add a swarm. The mesh stitches itself. Effective area grows with units in the field, not with infrastructure.

DUAL-RADIO FABRIC

UWB for in-swarm ranging and short-hop comms. Sub-GHz for hub-to-hub backbone — wall and vegetation penetrating, encrypted.

Range is not a fixed number. It is a function of how many hubs are deployed.

Neuro-Control: We don't override the insect. We bias what it already wants to do.

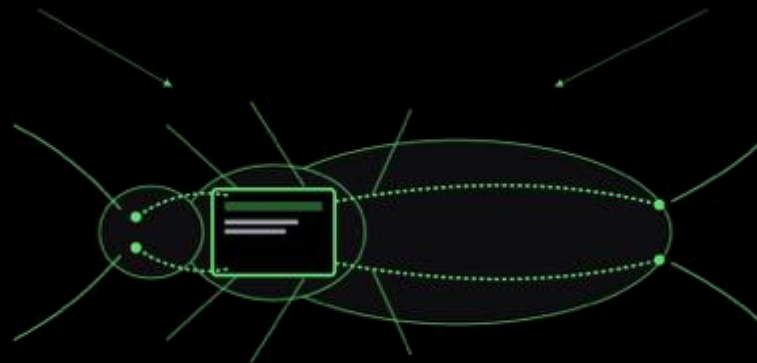
MECHANISM · CURRENT GENERATION

ANTENNA STIM

→ Turns left / right

CERCI STIM

→ Triggers escape run



BACKPACK · 4 ELECTRODES

Constant-current pulses, microamp range, 100–200 Hz.
The animal reads it as a sensory cue and steers.

NOT MOTOR OVERRIDE · BIASES INTENT

Below behavioral stress. Permitted under U.S. and German animal welfare law; counsel-audited; Fraunhofer-aligned protocols.

GEN 1 · DEPLOYED

Current-based stimulation

Constant-current pulses on 4 channels. Reliable steering and escape-reflex evocation. >1,200 controlled animals. The proven baseline.

GEN 2 · H1 2026

Analog adaptive stimulation

Waveform shaping replaces square pulses. Lower charge per command, longer adaptation window. ~50% energy gain — runtime past 8 hours.

GEN 3 · H2 2026 → 2027

Neural readout (closed loop)

Bio-amplifiers read state from the same nervous system we drive. Stim becomes a reply, not a broadcast. Day-scale runtime.

RESEARCH · UCSD

Optogenetic actuation (PoC)

Light-driven control of locomotor neurons. No surgical electrode placement, no electrical artifact, finer specificity. First light-driven gait scheduled H1 2027.

Breeding: Autonomous, no-touch swarm production. Each container breeds, instruments, and packs 100K cyborgs.

100K

COCKROACHES PER CONTAINER

PER CYCLE

1 day

ON-SITE MAINTENANCE

PER MONTH

EU + US

PRODUCTION FOOTPRINT

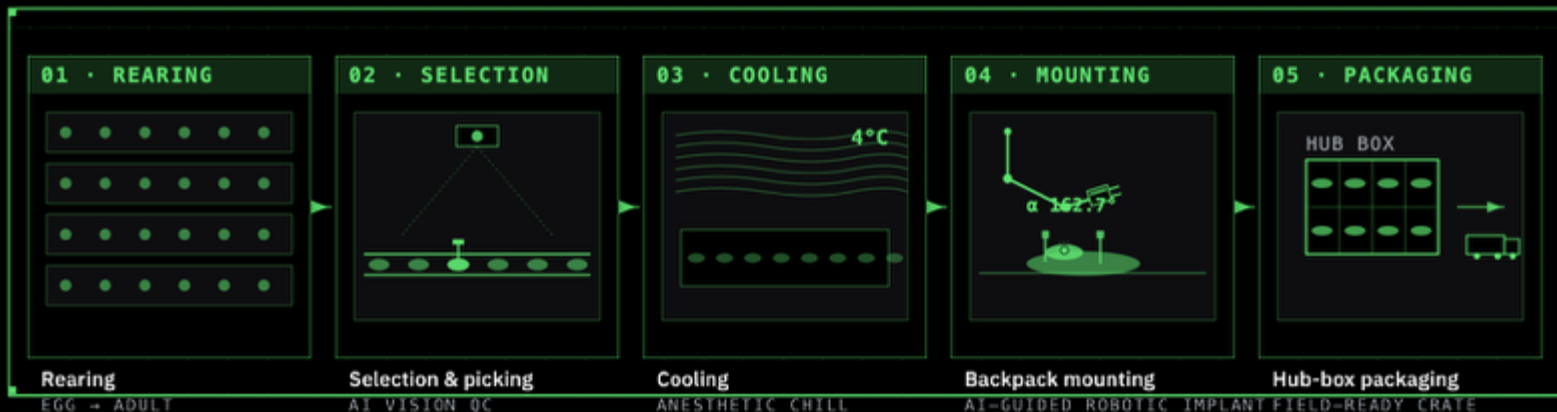
SCALING CONTAINERS

Truckable

DEPLOY NEAR DEMAND

40 FT ISO

BREEDING CONTAINER · 40 FT · SELF-CONTAINED



REMOTE MONITORING

Automated environmental control, food supply, and AI-based health monitoring. On-site maintenance reduced to one day per month.

BIOSECURITY

Distributed containers contain disease risk to a single unit. No mass-cluster failure mode. Closed colony, no foreign biological supply chain.

SOVEREIGNTY

Customers can require in-country production. A container drops near demand — EU site live, US site selected. Local production, local deployment.

From operating capability today to swarm-scale autonomy.

	CURRENT DEMONSTRATED IN FIELD	H1 2026 IN EXECUTION	H2 2026 PLANNED	H1 2027 PLANNED
NEURAL INTERFACE	>1,200 insects controlled. 4 electrode configs. Current-based stim.	Adaptive control. >8h runtime. >1 km reach. Analog stimulation (energy gain).	Neural readout via bio-amplifiers. Day-scale runtime.	Optogenetics PoC (UCSD). First light-driven locomotion.
SWARM OS	SDK beta deployed. Sitaware C2 integration shown.	Wireless update pipeline. Edge AI on-device.	SWARM OS v1: basic autonomy, NATO C2 integration.	SWARM OS v2: multi-carrier autonomy, full sensor fusion, SLAM alpha.
NAVIGATION	100+ swarm runs. Indoor / winter / desert. Compass control 0–25 °C.	Indoor waypoint refinement. Outdoor compass + triangulation.	IMU/GNSS waypoint nav. UWB ranging validated.	UWB triangulation indoor. Swarm-SLAM.
BREEDING & SCALING	10,000+ bred. 1st container commissioning.	1st container live (100K). Population dynamics validated.	2nd container live. US site selected.	5 containers (EU + US). 100K cyborgs / quarter.

SWARM Biotactics

Thanks for your Interest

STEALTH

No heat. No sound. Ultra-low signature.

ACCESS

Denied, confined and contested spaces.

SCALABILITY

Rapid deployment at biological scale.

PERSISTENCE

Long runtime. Ultra-low energy.

LIVE INTELLIGENCE

Real-time intelligence to operators.

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