# SENTINEL

MODULAR HUMANOID ROBOTICS PLATFORM

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“One Core. Every Mission.”

NVIDIA GTC 2026

lablab.ai Winner

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# 01 EXECUTIVE SUMMARY

SENTINEL is the world's first modular humanoid robotics platform, designed to serve multiple industries with a single universal core. Unlike existing robots that are purpose-built for a single application at exorbitant prices, SENTINEL uses one IP67/IP68 waterproof core that adapts seamlessly across warehouse logistics, precision agriculture, military operations, and home assistance.

The platform is built on the NVIDIA Jetson AGX Orin with 275 TOPS of AI compute, providing real-time perception, navigation, and decision-making. With four distinct robot configurations and one autonomous drone, SENTINEL covers the full spectrum of commercial and consumer robotics — all priced 60–80% below current competitors.

| €18,900 | €109,000 | 275 TOPS | 5 Configs |
|---|---|---|---|
| Home model starting price | Military model full spec | NVIDIA Jetson AGX Orin | 4 robots + 1 drone |

Pricing ranges from €18,900 for the home companion to €109,000 for the fully armored military variant, compared to competitors charging $150K to over $2M for single-purpose machines. The modular SENTINEL-LINK tool attachment system enables hot-swap of specialized end-effectors in seconds, dramatically reducing downtime and expanding capability without purchasing entirely new robots.

Avatar mode represents a breakthrough in human-robot collaboration: any SENTINEL unit can be remotely controlled in real-time via desktop application, smartphone, or VR headset. This enables human expertise to be deployed anywhere in the world through the robot's body, combining AI autonomy with human judgment for complex or novel situations.

> All SENTINEL models are fully waterproof. The sealed 6061-T6 aluminium core with Roxtec IP68 cable glands enables operation in rain, mud, dust, and temporary submersion — a capability no competitor currently offers across their product lines.

Manufacturing is based in Comuna Ciurila, Cluj County, Romania, leveraging the country's elite engineering talent at competitive costs. The 2,400 m² facility features a 200 kWp solar roof, generating 240 MWh annually and reducing operational costs by 60%. An on-site NVIDIA DGX A100 GPU datacenter with 16× A100 GPUs and 1,280 GB of VRAM provides the compute infrastructure for continuous AI model training and simulation.

Total Year 1 investment is €5,500,300, covering facility construction, equipment, initial inventory, and operations. The break-even point is reached in Year 3 at approximately 150 units per year, with the global humanoid robotics market projected to grow from $2.1 billion in 2025 to $38 billion by 2035.

SENTINEL has been validated as winner of the lablab.ai hackathon, demonstrating the viability of the modular robotics concept. Currently in the R&D and simulator development phase, the combination of modular architecture, aggressive pricing, waterproof construction, and avatar control positions SENTINEL to capture significant market share in the rapidly expanding robotics industry.

Key Milestones: lablab.ai hackathon winner · Initial investment phase · Break-even Year 3 · Global market $2.1B → $38B by 2035

# 02 THE PROBLEM WE SOLVE

| 1.1M | 57 yrs | 90M | €47K |
|---|---|---|---|
| Unfilled warehouse positions EU | Average farmer age in EU | Elderly care gap by 2030 | Cost per unfilled position/year |

The global economy faces an unprecedented convergence of labor crises. Warehouse and logistics companies cannot fill 1.1 million positions globally, driving up costs and slowing supply chains. Agriculture faces a generational cliff, with the average farmer age at 57 and fewer young people entering the profession. Meanwhile, an aging global population will create a 90 million person gap in elderly care by 2030.

Current robotic solutions are fundamentally inadequate. They are single-purpose machines, each designed for one narrow task in one specific environment. A warehouse robot cannot work on a farm. A farm robot cannot assist in the home. Each costs between $150,000 and $2,000,000+, placing them beyond the reach of most businesses.

> No modular cross-industry robotics platform exists today. 85% of potential robot deployments remain unfeasible due to cost, inflexibility, and environmental limitations. Most commercial robots cannot even operate in rain.

The lack of waterproofing is a critical gap. Warehouses flood, farms are muddy, military operations occur in all weather, and home robots must survive spills and outdoor use. Yet virtually no humanoid robot on the market today carries an IP67 or IP68 rating. SENTINEL was designed from the ground up to solve every one of these problems with a single, modular, waterproof platform.

# 03 PRODUCT LINE OVERVIEW

## 3.0 SENTINEL Core Platform

Every SENTINEL robot shares the same universal core — a sealed, die-cast 6061-T6 aluminium enclosure housing the compute, sensor fusion, and communication systems. This modular architecture means a single production line serves all variants, dramatically reducing manufacturing complexity.

| Parameter | Specification |
|---|---|
| Enclosure | Die-cast 6061-T6 aluminium, 320×200×120mm, IP67 |
| Compute | NVIDIA Jetson AGX Orin 64GB, 275 TOPS |
| IMU | 9-axis (accel + gyro + mag), 1kHz |
| Vision | 2× Intel RealSense D455 stereo depth |
| LiDAR | Ouster OS1-64, 360°, 120m range |
| OS | SENTINEL-OS (custom Linux, PREEMPT_RT) |
| Middleware | ROS2 Humble + Isaac ROS |
| Network | WiFi 6E + 5G + LoRa mesh |
| Security | AES-256, hardware TPM, secure boot |

## 3.1 SENTINEL-WH (Warehouse)

| €42,000 | €17,555 | 58% | 1.75m / 68kg |
|---|---|---|---|
| Sale price | BOM cost | Gross margin | Height / Weight |

The warehouse variant stands 1.75m tall, weighs 68kg, provides 6 hours of continuous runtime, and can handle payloads up to 30kg. Designed for pick-and-pack, inventory scanning, and autonomous pallet movement in fulfillment centers.

| # | Component | Spec | Qty | Total € |
|---|---|---|---|---|
| 1 | Jetson AGX Orin 64GB | 275 TOPS | 1 | 1,999 |
| 2 | Dynamixel XH540-W270 | 10.6Nm servo | 24 | 5,760 |
| 3 | Intel RealSense D455 | Stereo depth | 2 | 840 |
| 4 | Ouster OS1-64 | 360° LiDAR | 1 | 1,200 |
| 5 | LiFePO4 40Ah | 48V battery | 1 | 1,600 |
| 6 | 6061-T6 Al frame | CNC machined | 1 | 2,400 |
| 7 | Industrial gripper | 4-finger claw | 2 | 1,400 |
| 8 | Sensors + wiring | Complete kit | 1 | 2,356 |
| | **TOTAL** | | | **17,555** |

### Optional SENTINEL-LINK Tools (WH)

Vacuum Suction (€1,984) · Magnetic Gripper (€1,400) · RFID Writer (€600) · Thermal Camera (€740) · Pallet Lifter (€1,944) · Label Applicator (€277) · Vision AI Module (€831)

## 3.2 SENTINEL-AG (Agriculture)

| €40,500 | €17,434 | 57% | 1.45m / 72kg |
|---|---|---|---|
| Sale price | BOM cost | Gross margin | Tracked chassis |

The agriculture variant uses a tracked chassis for maximum terrain stability at 1.45m height and 72kg weight. It provides 8 hours of runtime with RTK GPS at 1cm precision, NDVI multispectral camera for crop health analysis, and LoRa mesh networking with 5km range. Capable of autonomous field surveying, targeted spraying, harvesting assistance, and tractor body conversion.

| # | Component | Spec | Qty | Total € |
|---|---|---|---|---|
| 1 | Jetson Orin NX 16GB | 100 TOPS | 1 | 1,199 |
| 2 | Dynamixel XH430 | 4.1Nm servo | 20 | 4,800 |
| 3 | RealSense D455 + NDVI | Depth+multi | 2 | 1,600 |
| 4 | Ouster OS0-32 | 360° LiDAR | 1 | 900 |
| 5 | LiFePO4 50Ah | 48V battery | 1 | 2,000 |
| 6 | 6061-T6 tracked frame | CNC machined | 1 | 2,800 |
| 7 | RTK GPS module | 1cm precision | 1 | 1,200 |
| 8 | LoRa + sensors + wiring | Complete kit | 1 | 2,935 |
| | **TOTAL** | | | **17,434** |

## Optional SENTINEL-LINK Tools (AG)

Irrigation Lance (€340) · Harvesting Claw (€860) · Spray Kit (€480) · Soil Sampler (€390) · Greenhouse Wheels (€720) · Seeder Drill (€1,400) · Fruit Conveyor (€2,100)

## 3.3 SENTINEL-MK (Military)

| €109,000 | €49,953 | 54% | 1.82m / 95kg |
|---|---|---|---|
| Sale price | BOM cost | Gross margin | Full armor |

The military variant is the most advanced configuration: 1.82m tall, 95kg, IP68 rated for 2m submersion, EMP-hardened electronics, NIJ IIIA ballistic armor panels, and full MIL-STD-810G compliance. Dual 960Wh hot-swap batteries provide 8 hours of combat runtime.

Weapons & Equipment: M4 rifle mount · 40mm grenade launcher · Thermal/laser sniper system · Night vision Gen4 · Riot control module · Medic kit · Anti-drone EW suite · Climbing grapple · EMP pulse gun · Laser dazzler · Electroshock system

| # | Component | Spec | Qty | Total € |
|---|---|---|---|---|
| 1 | Jetson AGX Orin 64GB | 275 TOPS | 1 | 1,999 |
| 2 | Dynamixel XH540-W270 | 10.6Nm servo | 36 | 8,640 |
| 3 | Multi-sensor suite | Thermal+depth+NV | 4 | 5,600 |
| 4 | 960Wh LiFePO4 | 48V hot-swap | 2 | 3,200 |
| 5 | Armored 6061-T6 frame | NIJ IIIA panels | 1 | 12,000 |
| 6 | Mil-spec comms | 5G+SATCOM+mesh | 1 | 4,500 |
| 7 | Weapon mounts+EW | Hardened | 1 | 3,800 |
| 8 | EMP shield+sealing | MIL-STD-810G | 1 | 10,214 |
| | **TOTAL** | | | **49,953** |

## 3.4 SENTINEL-HM (Home)

| €18,900 | €5,782 | 69% | 1.40m / 32kg |
|---|---|---|---|
| Sale price | BOM cost | Gross margin | Compact & safe |

The home companion stands 1.40m tall, weighs just 32kg, and features an OLED face with 48 emoji expressions for natural human interaction. Voice AI provides conversational ability, Matter smart home protocol enables full home automation integration, ISO 13482 safety compliance ensures child-safe operation in domestic environments.

## Optional SENTINEL-LINK Tools (HM)

Serving Tray (€120) · Vacuum Module (€340) · Kitchen Prep Kit (€580) · Garden Tool Set (€290)

## 3.5 SENTINEL-D (Drone)

| €9,800 | €5,517 | 44% | 35 min |
|---|---|---|---|
| Sale price | BOM cost | Gross margin | Flight time |

The SENTINEL-D autonomous drone provides 35 minutes of flight time with a 4K primary camera and thermal imaging secondary camera. Autonomous waypoint navigation, obstacle avoidance, and real-time video feed to any SENTINEL ground unit or operator station. Folds into a compact dock mounted on any SENTINEL robot for rapid aerial deployment.

# 04 TECHNICAL SPECIFICATIONS

## All-Model BOM Comparison (€)

| Category | WH | AG | MK | HM | Drone |
|---|---|---|---|---|---|
| Compute | 1,999 | 1,199 | 1,999 | 899 | 599 |
| Actuators | 5,760 | 4,800 | 8,640 | 2,400 | 1,200 |
| Sensors | 2,840 | 3,200 | 5,600 | 1,200 | 1,800 |
| Battery | 1,600 | 2,000 | 3,200 | 800 | 400 |
| Frame | 2,400 | 2,800 | 12,000 | 600 | 800 |
| Comms | 800 | 1,200 | 4,500 | 400 | 400 |
| Connectors | 1,200 | 1,400 | 3,800 | 600 | 200 |
| Sealing | 956 | 834 | 2,214 | 482 | 118 |
| **TOTAL** | **17,555** | **17,434** | **49,953** | **5,782** | **5,517** |
| **Sale Price** | **42,000** | **40,500** | **109,000** | **18,900** | **9,800** |
| **Margin** | **58%** | **57%** | **54%** | **69%** | **44%** |

## Assembly Process (10 Steps)

| | | |
|---|---|---|
| 1 | **CNC Machining** | Cut and mill 6061-T6 aluminium frame components on 5-axis CNC |
| 2 | **Welding & Joining** | FANUC robotic TIG welding of frame sections, pressure tested |
| 3 | **Surface Treatment** | Anodizing, powder coating, and corrosion protection |
| 4 | **Electronics Assembly** | SMT pick-and-place for PCBs, reflow soldering, AOI inspection |
| 5 | **Wiring Harness** | Cable routing with Roxtec IP68 glands, continuity testing |
| 6 | **Actuator Install** | Mount and calibrate all Dynamixel servos, torque verification |
| 7 | **Sensor Integration** | Install cameras, LiDAR, IMU; calibrate sensor fusion |
| 8 | **Core Module Install** | Seat Jetson Orin, connect bus, flash SENTINEL-OS |
| 9 | **Sealing & IP Test** | Final gasket installation, pressure chamber IP67/68 verification |
| 10 | **QA & Burn-In** | 48-hour burn-in, motion calibration, AI model validation |

## Connector System

| Connector | Type | Purpose |
|---|---|---|
| CORE BUS | 55-pin MIL-SPEC | Main compute + power backbone |
| TOOL DOCK | 16-pin quick-release | SENTINEL-LINK tool attachments |
| SENSOR PORT | M12 circular | External sensor expansion |
| CHARGING | Anderson PP45 | DC fast-charge input |

## Brain & Software Stack

NVIDIA Jetson AGX Orin running JetPack 6.0 with SENTINEL-OS, a custom PREEMPT_RT Linux distribution. ROS2 Humble provides the middleware layer, integrated with NVIDIA Isaac ROS for GPU-accelerated perception. Computer vision uses YOLOv8 for object detection, ORB-SLAM3 for simultaneous localization and mapping, and the SENTINEL Avatar SDK for remote telepresence control.

# 05 MANUFACTURING & PRODUCTION

The SENTINEL manufacturing facility is a purpose-built 2,400 m² production center located in Comuna Ciurila, Cluj County, Romania. The site combines advanced CNC machining, robotic welding, SMT electronics assembly, and comprehensive testing in a single integrated facility.

## Facility Construction Costs

| Item | Cost (EUR) |
|---|---|
| Land purchase | 180,000 |
| Building construction | 720,000 |
| Interior fit-out | 340,000 |
| Utilities | 120,000 |
| Solar PV system (200 kWp) | 226,000 |
| Fire safety & security | 80,000 |
| IT infrastructure | 100,000 |
| **Subtotal** | **1,766,000** |

## Production Equipment

| Equipment | Spec | Cost (EUR) |
|---|---|---|
| 5-axis CNC | DMG MORI CMX 600V | 185,000 |
| Fiber Laser Cutter | Trumpf TruLaser 1030 | 120,000 |
| FANUC Welding Robot | ARC Mate 120iD | 85,000 |
| Wire EDM | Sodick VL400Q | 95,000 |
| Hydraulic Press | 200-ton Schuler | 45,000 |
| Ultrasonic Welder | Branson 2000X | 28,000 |
| Paint Booth | Spray-bake 6m | 35,000 |
| CMM Inspection | Hexagon Absolute Arm | 42,000 |
| SMT Pick-Place | Juki RS-1R | 65,000 |
| Reflow Oven | Heller 1826 MK5 | 38,000 |
| Test Equipment | Oscilloscopes, thermal | 25,500 |
| **Total** | | **763,500** |

## Solar Power System

The facility roof hosts a 200 kWp solar array: 800× Jinko Tiger Neo 570W panels generating approximately 240 MWh per year. Total installation cost is €226,000 with a projected 7-year return on investment, reducing grid electricity costs by approximately 60%.

## Personnel (Elite Romanian Engineers)

| Role | Rate (€/h) | Monthly (€) |
|---|---|---|
| Assembly Tech ×2 | 16–18 | 1,850–2,100 |
| Electronics Eng ×2 | 22–32 | 2,550–3,700 |
| QA Engineer ×1 | 18–26 | 2,100–3,000 |
| CNC Machinist ×1 | 14–20 | 1,620–2,300 |
| Production Mgr ×1 | 24–36 | 2,800–4,200 |
| Robot Programmer ×1 | 22–30 | 2,550–3,500 |
| **Team Monthly** | | **€24,100** |

Romania vs Germany cost advantage: €24,100/month vs €33,300/month equivalent team. Monthly savings of €9,200 — over €110,000 per year in labor cost reduction alone.

## GPU Datacenter (On-Site)

The facility houses 2× NVIDIA DGX A100 systems providing 16× A100 GPUs with a combined 1,280 GB of HBM2e VRAM. Total datacenter cost: €309,900. Used for continuous AI model training, simulation environments, digital twin development, and Avatar mode latency optimization.

# 06 AUTONOMY & POWER RESEARCH

## Current Battery Specifications

| Model | Battery | Capacity | Runtime |
|---|---|---|---|
| SENTINEL-WH | LiFePO4 40Ah 48V | 1,920 Wh | 6 hours |
| SENTINEL-AG | LiFePO4 50Ah 48V | 2,400 Wh | 8 hours |
| SENTINEL-MK | LiFePO4 2×40Ah 48V | 3,840 Wh | 8 hours |
| SENTINEL-HM | LiFePO4 20Ah 48V | 960 Wh | 10 hours |

## Research Paths

### Solid-State Batteries

Next-gen solid-state cells promise 2× energy density, enabling 12–16 hour runtimes. Target integration: 2028.

### Solar Skin Integration

Flexible solar panels integrated into robot body panels, generating 80–120W continuous. Extends runtime by 15–25% in daylight operations.

### Portable Solar Array

400W folding camouflage solar array for military deployment. Charges MK variant to 80% in 4 hours. Weighs 8kg folded.

### Hydrogen Fuel Cell

72+ hour runtime target. Hydrogen fuel cell range extender module compatible with all ground models. Partnership discussions with Toyota and Hyundai fuel cell divisions.

# 07 MARKET ANALYSIS

## Humanoid Robot Competitors

| Competitor | Model | Price | Waterproof | Modular |
|---|---|---|---|---|
| Boston Dynamics | Atlas | $2M+ | No | No |
| Tesla | Optimus | ~$20K target | No | No |
| Agility Robotics | Digit | $250K+ | No | Limited |
| Figure AI | Figure 02 | ~$60K | No | No |
| Unitree | H1 | $90K | No | No |
| **SENTINEL** | **All models** | **€18.9–109K** | **IP67/68** | **Full** |

## Warehouse Robot Competitors

| Competitor | Model | Price | Humanoid | Outdoor |
|---|---|---|---|---|
| Locus Robotics | AMR fleet | $35–50K | No | No |
| 6 River Systems | Chuck | $40K | No | No |
| Fetch Robotics | Freight 500 | $60K | No | No |
| **SENTINEL-WH** | **Warehouse** | **€42K** | **Yes** | **IP67** |

## Military Robot Competitors

| Competitor | Model | Price | Humanoid | Submersible |
|---|---|---|---|---|
| Boston Dynamics | Spot | $74.5K | No (quad) | No |
| Ghost Robotics | Vision 60 | $150K+ | No (quad) | No |
| Milrem | THeMIS | $600K+ | No (UGV) | No |
| **SENTINEL-MK** | **Military** | **€109K** | **Yes** | **IP68 2m** |

## Agriculture Robot Competitors

| Competitor | Model | Price | Multi-crop | Humanoid |
|---|---|---|---|---|
| John Deere | See & Spray | $800K+ | Limited | No |
| Naïo Technologies | Oz/Dino/Ted | €50–150K | Limited | No |
| FarmWise | Titan FT-35 | $200K+ | Limited | No |
| **SENTINEL-AG** | **Agriculture** | **€40.5K** | **Yes** | **Yes** |

## 6 Key Competitive Advantages

**1. Modular Architecture**

One core platform serves all industries. No competitor offers true cross-industry modularity.

**2. Aggressive Pricing**

60–80% below comparable competitors. €18.9K home model vs $150K+ industry average.

**3. Full Waterproofing**

IP67/IP68 across all models. No humanoid competitor offers weather-sealed operation.

**4. Avatar Telepresence**

Remote control via desktop, smartphone, or VR headset. Human expertise deployed anywhere.

**5. SENTINEL-LINK Hot-Swap**

Tool attachments swap in seconds. One robot, unlimited capability expansion.

**6. Romanian Cost Advantage**

Elite engineering talent at 30–40% lower cost than Western Europe. Sustainable margin advantage.

## IP67/IP68 Waterproofing

All SENTINEL models feature sealed 6061-T6 aluminium construction with Roxtec IP68 cable glands, Viton gaskets, and pressure-tested enclosures. The WH, AG, and HM models carry IP67 certification (dust-tight, 30-minute immersion at 1m). The MK military variant achieves IP68 (continuous submersion at 2m depth), enabling river crossings and amphibious operations.

## Avatar Mode

Avatar mode enables real-time remote control of any SENTINEL unit through three interfaces: desktop application for precision control, smartphone app for quick interventions, and VR headset for full immersive telepresence. Sub-50ms latency on 5G networks. Enables human experts to operate robots across continents without travel.

## Military Zero-Casualty Doctrine

SENTINEL-MK supports the emerging zero-casualty military doctrine: robots perform the most dangerous operations while human operators remain safely at base. Avatar mode provides human judgment for complex decision-making while eliminating physical risk to personnel.

## Use Case Scenarios

**Warehouse Night Shift**

Autonomous pick-and-pack during off-hours, 200+ picks/hour, zero labor cost.

**Precision Vineyard**

NDVI scanning + targeted spraying reduces chemical use 40%, RTK GPS row navigation.

**Border Patrol**

24/7 autonomous patrol with thermal detection, Avatar override for threat assessment.

**Elderly Companion**

Medication reminders, fall detection, emergency calls, daily activity assistance.

**Disaster Response**

Drone aerial survey + MK ground unit for search and rescue in collapsed structures.

**Smart Greenhouse**

Climate monitoring, automated irrigation, harvest-ready detection, yield optimization.

# 08 FINANCIAL PROJECTIONS

## Unit Economics

| Model | Sale Price | BOM Cost | Margin € | Margin % |
|---|---|---|---|---|
| SENTINEL-WH | €42,000 | €17,555 | €24,445 | 58% |
| SENTINEL-AG | €40,500 | €17,434 | €23,066 | 57% |
| SENTINEL-MK | €109,000 | €49,953 | €59,047 | 54% |
| SENTINEL-HM | €18,900 | €5,782 | €13,118 | 69% |
| SENTINEL-D | €9,800 | €5,517 | €4,283 | 44% |

## Investment Summary

| Category | Amount (EUR) |
|---|---|
| Facility construction | 1,766,000 |
| Production equipment | 763,500 |
| GPU datacenter (2× DGX A100) | 309,900 |
| Initial BOM inventory (20 units) | 690,000 |
| Certification & legal | 180,000 |
| Marketing & launch | 250,000 |
| Working capital reserve | 728,500 |
| **One-Time Total** | **4,687,900** |
| | |
| Annual personnel (8 staff) | 289,200 |
| Annual utilities & maintenance | 96,000 |
| Annual insurance & overhead | 144,000 |
| Annual R&D budget | 283,200 |
| **Annual Total** | **812,400** |
| | |
| **Year 1 Total Investment** | **5,500,300** |

Break-even point: Year 3 at approximately 120 units sold. Cumulative revenue covers all one-time and recurring costs by mid-Year 3.

## 5-Year Revenue Projection

| Year | Units | Revenue | Costs | Net Profit | Cumulative |
|---|---|---|---|---|---|
| 2026 | 5 | €0.2M | €5.5M | −5.3M | −5.3M |
| 2027 | 80 | €4.2M | €2.8M | +1.4M | −3.9M |
| 2028 | 150 | €8.5M | €3.1M | +5.4M | +1.5M |
| 2029 | 280 | €16M | €4.8M | +11.2M | +15.6M |
| 2030 | 450 | €29M | €7.2M | +21.8M | +37.4M |

Projections assume a weighted average selling price of €52,000 per unit across the product mix, with warehouse and agriculture models representing 65% of volume. Annual cost growth of 15% accounts for scaling personnel, facility expansion, and increased R&D investment. Cumulative profit reaches approximately €14M by end of Year 4.

# 09 VISION & ROADMAP

**2026 R&D**

Initial investment. AI brain development, simulator platform, facility setup. Prototype building and testing. First SENTINEL-WH model ready by end of year.

**2027 FULL LAUNCH**

All 4 models (WH, AG, MK, HM) and accessories released. Manufacturing line operational. Drone integration. First deliveries. Initial market entry.

**2028 GROWTH**

Production ramp-up. 150 units. Avatar mode v2 with VR headset support. Solid-state battery testing begins. International expansion.

**2029 SCALE**

280 units. Facility expansion to 5,000 m². International market expansion. Hydrogen fuel cell prototype.

**2030 GLOBAL**

450 units. Global distribution network. 2% market share target. €380M revenue trajectory.

**2035 MARKET LEADER**

Target: leading modular robotics platform globally. Full autonomy. 10,000+ units/year. Multiple facility locations worldwide.

Target: 2% global humanoid robotics market share by 2030 = €380M annual revenue. The modular platform approach means every new industry vertical multiplies revenue without proportional R&D investment.