



ONDAS
HOLDINGS INC.

Autonomous Drones, Data, and AI

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This presentation also contains estimates and other information concerning our industry that are based on industry publications, surveys and forecasts. This information involves a number of assumptions and limitations, and we have not independently verified the accuracy or completeness of the information.

ONDAS HOLDINGS INC.

Mission-critical Data Solutions

Platform adoption in motion at Ondas

Proprietary, Platform Technologies
Integrated, Data Ecosystem
Blue Chip Customers
Large, Critical End Markets

Listed

Nasdaq: ONDS

Employees

108

Invested Capital

> \$275 Million

Offices

Waltham, MA

Sunnyvale, CA

Petah Tikva, Israel

ONDAS NETWORKS

Provider of next-generation private
industrial wireless networking technologies
for critical industrial markets



Next-gen data platform upgrade
cycle starting with Class I Railroads



ONDAS AUTONOMOUS SYSTEMS

Leading data and information services
solution for commercial drone markets

AIRBOTICS

IRON
DRONE

AR AMERICAN
ROBOTICS

Global leader in hyper-
growth commercial drone market



Investment Highlights

2023 was a breakout year for Ondas

- Platform adoption drove **significant revenue growth**
 - Generated \$15.7 million in revenue (more than 7-fold growth YoY)
 - Ondas Networks generated \$6.7 million of revenue
 - OAS generated \$9.0 million of revenue
- Ondas Networks growth driven by **FCC 900 MHz mandate**
 - Class I Railroads to upgrade legacy 900 MHz network
 - Pipeline includes expansion beyond 900 MHz
- OAS installing world's first **autonomous drone fleets in cities**
 - Groundbreaking Urban Drone Infrastructure fleet expansion begins in Dubai & UAE
 - US expansion launched; MassDOT and others pending
- Expect Optimus System **FAA Type Certificate** to shorten sales cycles
- **Balance sheet strengthening** removes overhang
 - Strategic investment in Ondas Networks subsidiary
 - OAS revenue and acquisition integration drives path to profitability



Large Critical Infrastructure & Government Markets

DRONE-IN-A-BOX (DIB) MARKETS

Data solutions drive over \$120+ Billion⁽¹⁾ TAM

SMART CITY MARKET⁽²⁾

\$15 B

COUNTER DRONE MARKET⁽³⁾

\$10 B

INDUSTRIAL MARKET⁽⁸⁾

\$68 B

\$22 B

Sub-Market Callout:
Oil & Gas ⁽⁸⁾

AGRICULTURE MARKET⁽⁸⁾

\$25 B

DEFENSE MARKET⁽⁸⁾

\$20 B

INDUSTRIAL WIRELESS MARKETS

Upgrade cycles driven by automation demand



Electric Utility

\$26B global market by 2027 ⁽⁴⁾



Land Radio Module

\$30B global market by 2027 ⁽⁵⁾



Oil and Gas

\$5B global market by 2026 ⁽⁶⁾



Railroads

Estimated PTC spend > \$10B ⁽⁷⁾

(1) PWC, May 2016

(2) Management estimates; assuming cities must have 100,000+ population to qualify, and one Optimus system will be deployed for every 100,000 inhabitants.

(3) "Anti-drone Market Report." Grand View Research, April 2023.

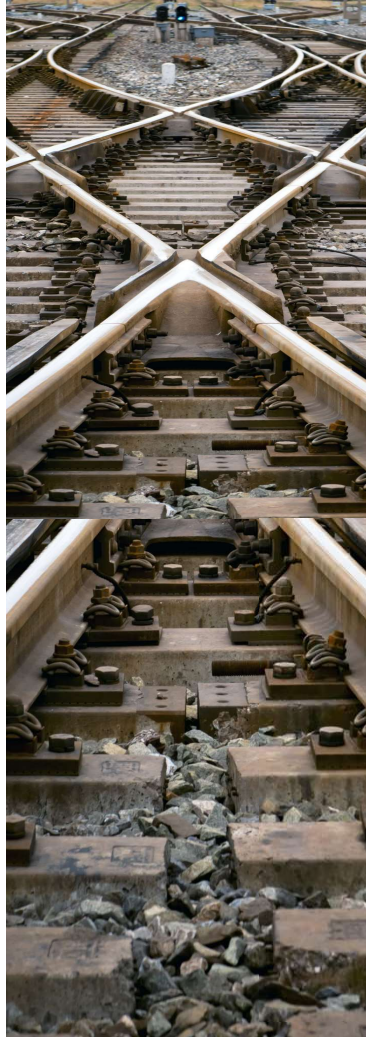
(4) "Utility Communication Market." MarketsandMarkets Research Private Ltd., December 2022.

(5) "Land Mobile Radio (LMR) Systems." Transparency Market Research 2022.

(6) "Oilfield Communications Market." Modor Intelligence, January 2022.

(7) American Association of Railroads, 2021.

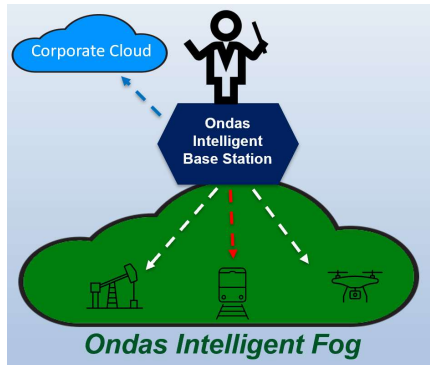
(8) Management estimates



Turning Yesterday's Narrowband Into Tomorrow's Broadband



Ondas Networks Overview



FullMAX™ Connectivity

- IEEE 802.16 standards ("dot16")
- Enhanced capacity / flexibility
- Maximize low-band radio spectrum
- 7 patents (15 pending)

Industrial Data Ecosystem

- Deploying intelligent systems across field area operations
- Edge compute applications
- Automation technologies
- Sensor networks

Large, Global Markets

- Critical infrastructure & public safety
- Massive private network upgrade cycle
- TAM in billions
- Capital-light financial model

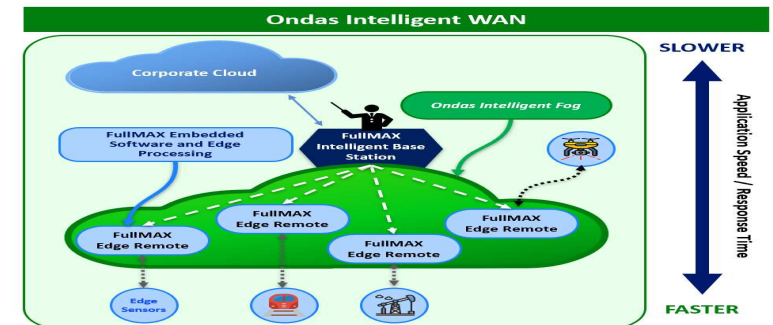
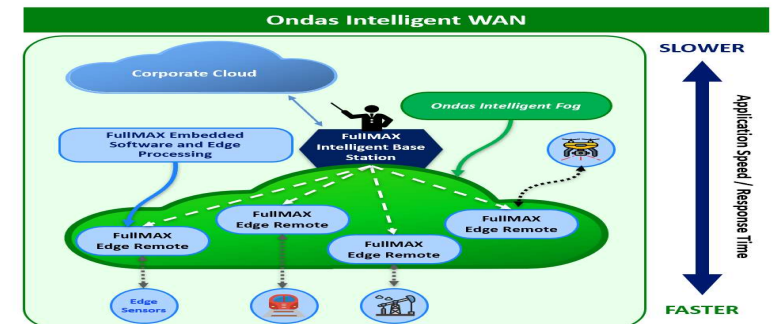
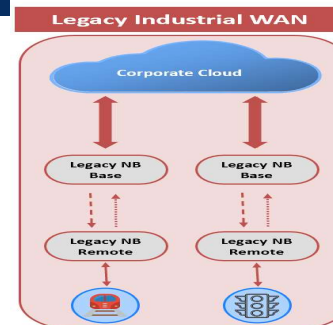
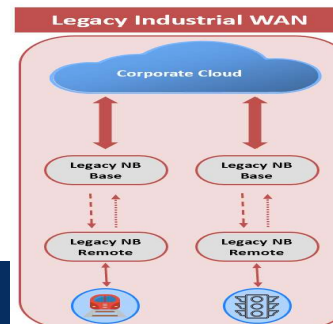
FullMAX™ Commercial Adoption Launching with Class I Railroads

A New Industrial Wireless Infrastructure

FullMAX™ software defined connectivity enables the deployment of intelligent data applications in industrial markets

FullMAX™ PLATFORM

- End-to-end platform
- Maximize data capacity
- Efficiently allocate precious bandwidth
- Prioritize mission-critical applications
- Enable low latency
- Edge-compute
- State-of-the-art encryption



Class I Freight Rail– Huge Footprint

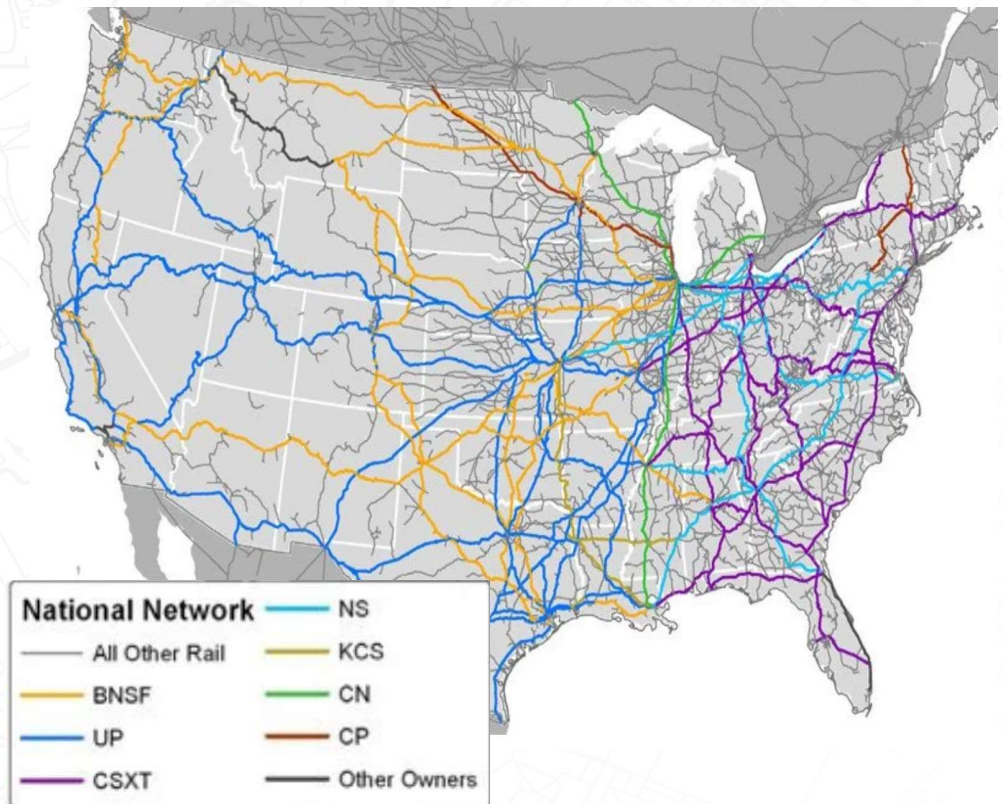
Key Class I Rail Statistics

- Common networks across all 7 Class 1 Rails
- 140,000 Miles of Track
- 40,000 Waysides // 65,000 Rail Crossings
- 25,000+ Locomotives // 1.6 million rail cars
- **Total addressable market for private wireless Rail networks in North America in excess of \$1.3 Billion⁽¹⁾**

~5% Productivity increase drives ~\$5.0 billion of Additional Revenue for Railroads⁽¹⁾

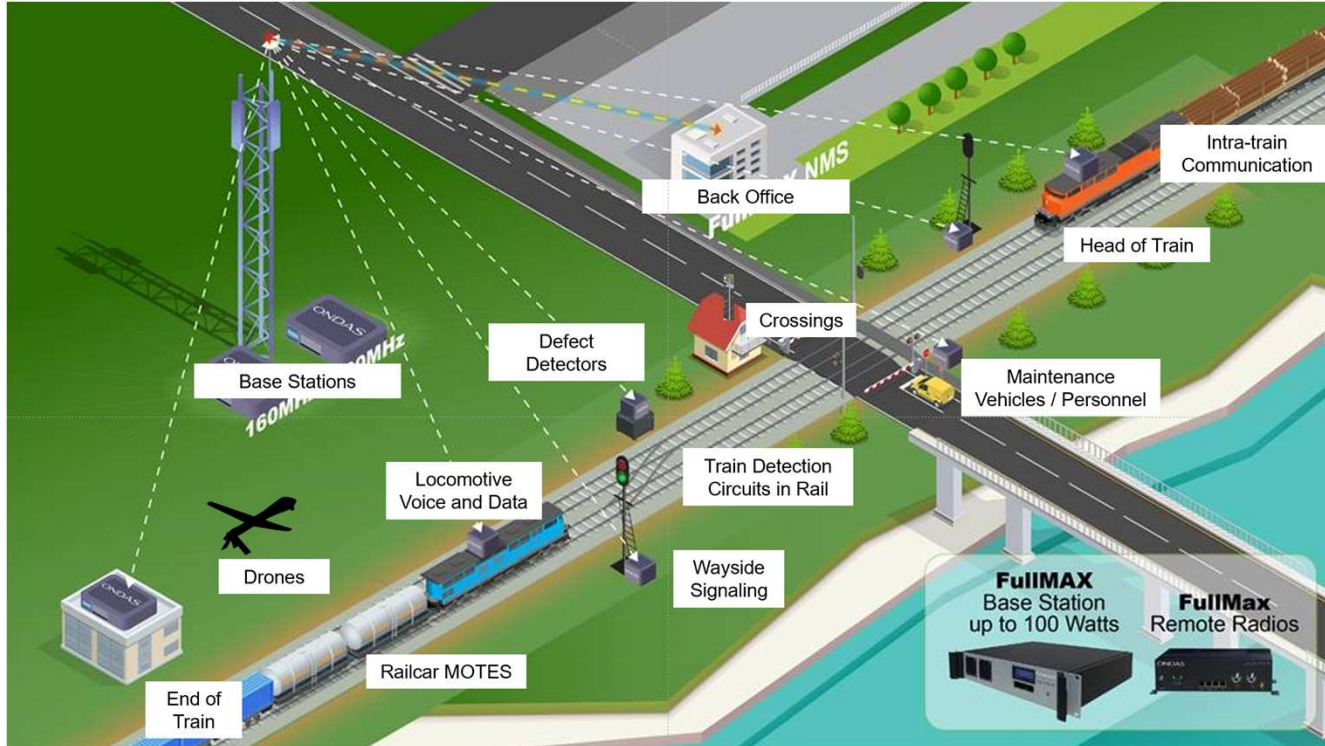
(1) Management estimates

FullMAX™ Connects Rail Infrastructure



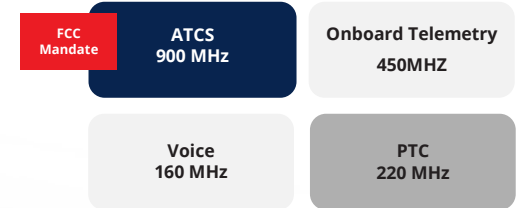
Connectivity is Core to Digital Rail

Private wireless networks required for existing and new applications; IP network supports explosion of edge activity



ONDAS NETWORKS

PRIVATE NETWORKS

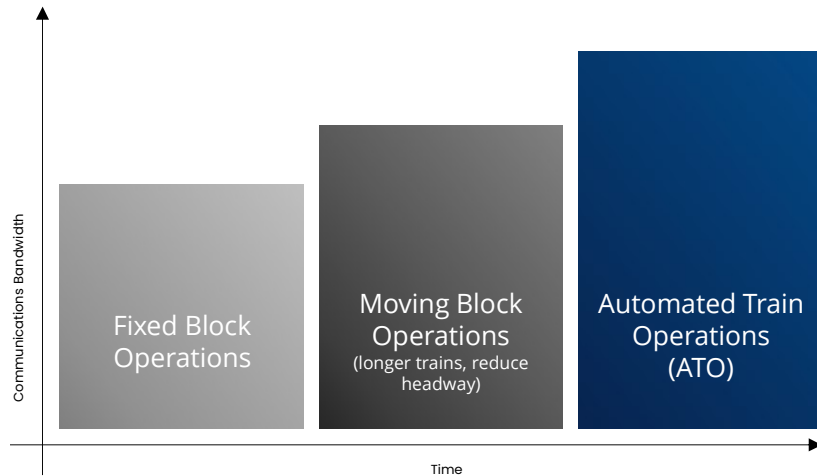


RAILROAD INFRASTRUCTURE

- Private, Owned & Operated
- Secure, Reliable, QoS
- Flexible; interoperable
- Backwards compatible
- Nationwide coverage
- Lower cost

Autonomous Trains: Siemens Partnership

FullMAX™ wireless platform enables evolution to autonomous trains



Landmark dot16 Partnership

- Marketing agreement
 - Focused on Class I North America
 - Expanding to Europe & Asia
 - Adding Passenger & Transit markets
- FullMAX™ product integration enhances value of network and dot16 ecosystem
 - ATCS 900 MHz
 - HOT 450 MHz North America & Asia
 - European locomotive program

**MULTIPLE JOINT-DEVELOPMENT PROGRAMS
ON THE ROADMAP**

Joint-Development Programs

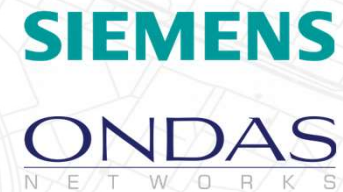
Advanced Train Control (**ATCS**) was the initial joint-product development program

SIEMENS LEGACY ATCS



- Narrowband systems; inefficient legacy protocols
- 1980s vintage – No road map
- KBps of data throughput
- Multiple unit system; compute not embedded

ONDAS / SIEMENS ATCS



- Next generation platform; upgradable applications
- ATCS protocol on a unified system
- More data capacity and throughput
- Docker/ container architecture; host newly developed protocols (edge compute)

The 900 MHz Opportunity

Deadlines drive the transition from legacy 900 MHz system; retirement for 2025

900MHz

(\$ IN MILLIONS)

	UPGRADE	EXPAND	TOTAL
Base Infrastructure	\$105.0	\$ 42.0	\$147.0
Edge Remotes			
Wayside	66.0	30.0	96.0
Crossings	48.0	101.2	149.2
Other	14.0	55.6	69.6
	\$233.0	\$228.8	\$461.8

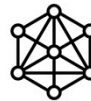
NETWORK UPGRADE DRIVERS



Automation



Edge Compute



Sensor Networks

Commercial Deployment

- Legacy 900 network slated for retirement by 2025 to meet FCC mandate
- Initial deployment represents base station, network coverage
- Edge remote deployments are existing legacy and newly identified critical applications
- MC-IoT functionality drives network expansion
 - Legacy applications are upgraded
 - New applications are developed/introduced
- Enabling automation carries significant ROI for Rail sector

(1) Management estimates

900 MHz Migration in Motion

The **dot16** adoption cycle starting in Rail and 900 MHz

RAILROADS BEGIN 900 MHz LAUNCH

\$6.7 MILLION

Generated record revenue in 2023

RECORD VOLUME

Record volume shipments to Siemens

CLASS I RAILS

Engaged in field activity to support commercial deployment planning activities and negotiations for volume orders

MOMENTUM BUILDING

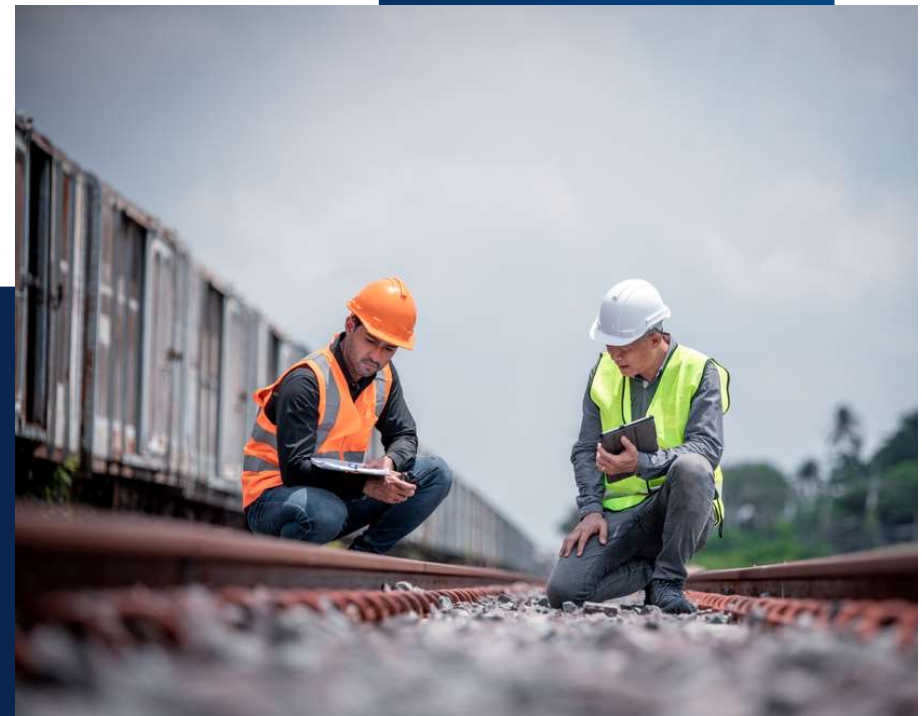
Industry momentum building for orders and deployment planning



Preparing for 900 MHz upgrade

2025 deadlines support expected order ramp

- **Ondas and Siemens engaged in field and purchasing groups**
 - Rail operations teams (e.g., C&S groups) with budgets and responsibility for network operations
 - Initial deployments focused on critical network and high traffic locations, as well as new “vital communications” end points such as railroad crossings
 - Siemens negotiating orders; pricing and deployment plans being outlined
- **MxV Rail continues to advance dot16 integration**
 - Network controller development
 - Preparing new work on 160 MHz network
- **Production capacity scaling**
 - Recent financing provides working capital for inventory build
 - Transitioned to contract manufacturer to increase production capacity



Outlook for Ondas Networks

Production ramp accelerates;
tracking major orders for 900 MHz

- **Grow revenue and orders**
 - Continue production capacity expansion in advance of expected volume orders
 - Secure major volume orders; build inventory in front of 900 MHz migration
- **Continue product and network development**
 - Siemens and Ondas field activity intensifying with increasing number of Class I Rails
 - Advancing product development programs; new opportunities emerge
 - Siemens UK for on-locomotive
 - Passenger and transit programs
- **Focus on cash efficiency; path to profitability**
 - Revenue and gross profit to scale and increasingly offset OPEX
 - Maintain culture of strong cost controls

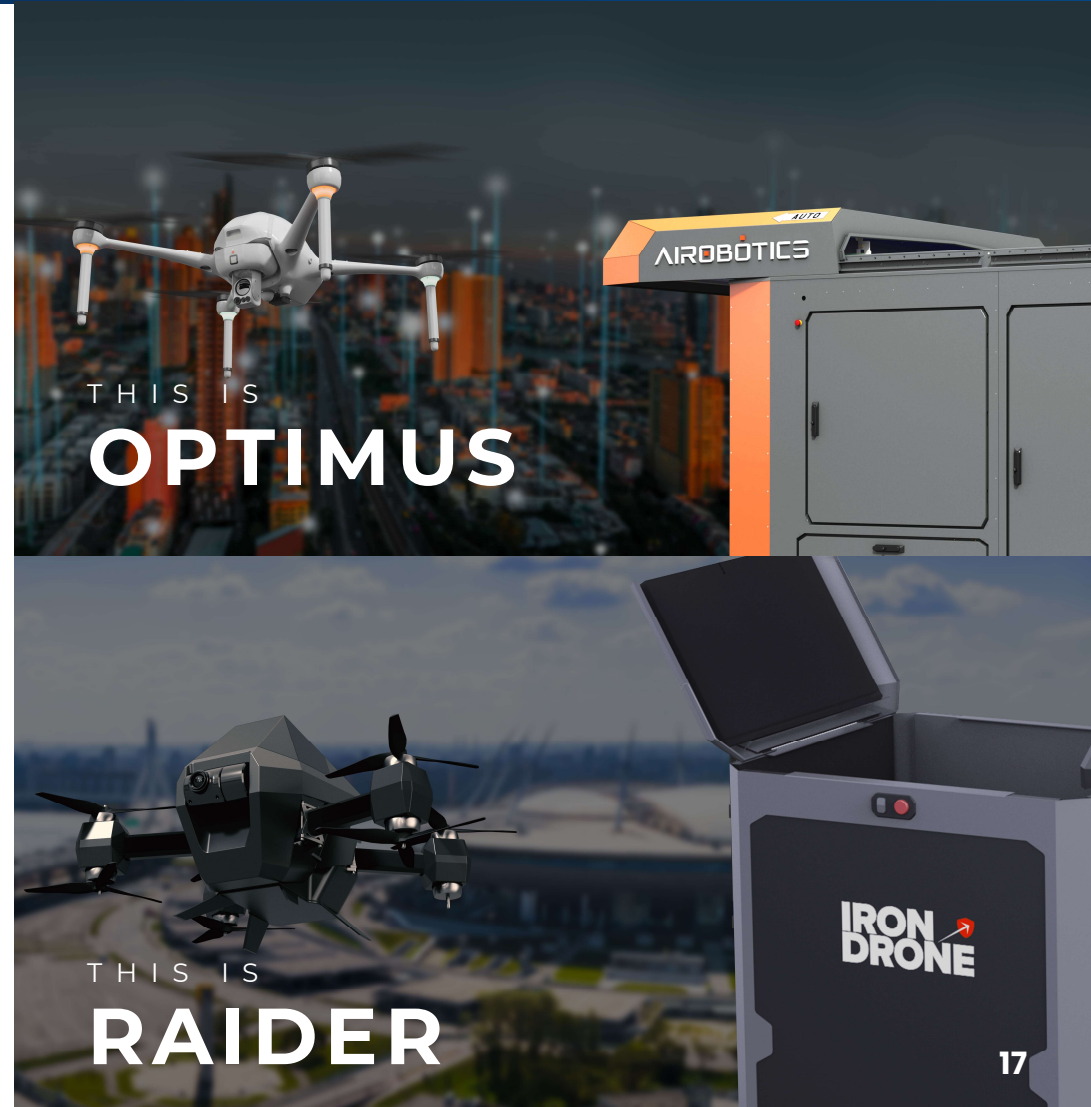


Scaling Autonomous Drone Platforms



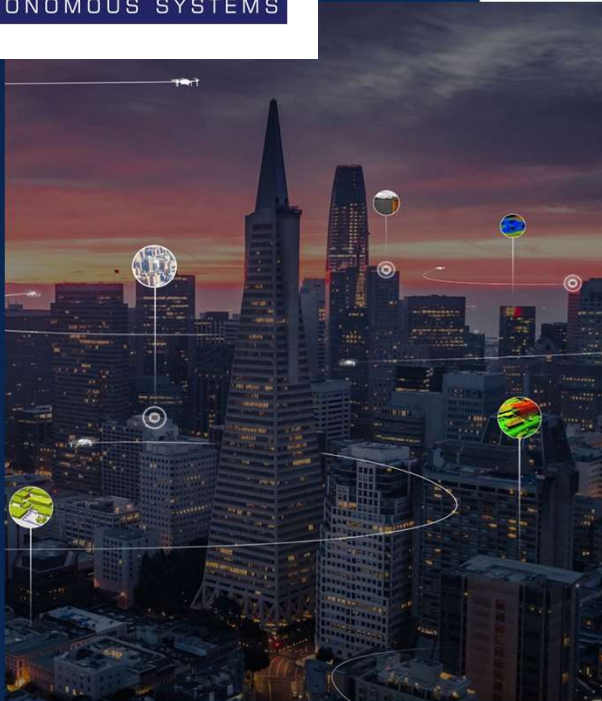
COMBINATION CREATES:

- Leading autonomous drone technology platforms
- Dual-use systems targeting global government, industrial and military markets
- Global marketing and field service platform
- Revenue acceleration // Expense efficiencies



OAS OVERVIEW

ONDAS
AUTONOMOUS SYSTEMS



1

Drones As An Infrastructure

OAS is the first company to provide drones installed as fleets of fixed critical infrastructure, for aerial security, and data collection and analysis

2

Unique and Mature, Dual-Use Drone Technology

The Optimus and Raider systems are among the most advanced autonomous drone systems in the world, enabling 24/7 drone operations with no human intervention across government, industrial and military markets

3

Multi-Billion Dollar Potential

OAS address the needs of Government and Tier-1 Commercial entities in Smart/Safe City, Defense, HLS and Industrial markets

4

FAA Certification & Regulatory Leadership

Optimus is one of the world's most advanced systems; demonstrated by the recently awarded FAA Type Certification

5

Commercial Fleet Adoption

OAS is now scaling fleets of Optimus in major UAE cities and bringing this fleet expansion strategy to the United States and other International markets in the expectation of significant revenue growth

Optimus System

Urban drone infrastructure



UNMATCHED SAFETY & RELIABILITY

Fully Autonomous Drone-in-a-Box

Deployed as Infrastructure

- City-wide
- Campuses
- Borders
- Airport & water ports
- Critical locations & infrastructure

Aerial Data Services

- Live video
- Inspection

The Optimus System

Designed for 24/7 multiple data collection



COVERAGE AREA

30 sq miles coverage area



FULL AUTOMATION 24/7 MULTIPLE DATA COLLECTION

Allowing routine data capture without human intervention



ROBUSTNESS

Rugged exterior and climate-controlled Drone shelter for harsh weather and industrial environments



Battery cabinet holds up to 11



Payload cabinet holds up to 9



Swappable Payloads



2D/3D
MAPPING



LASER SCANNING
(LIDAR)



THERMAL VIDEO



LIVE VIDEO



EMERGENCY RESPONSE
DELIVERY

Urban Drone Infrastructure

World First | Autonomous Drone Installations in Cities

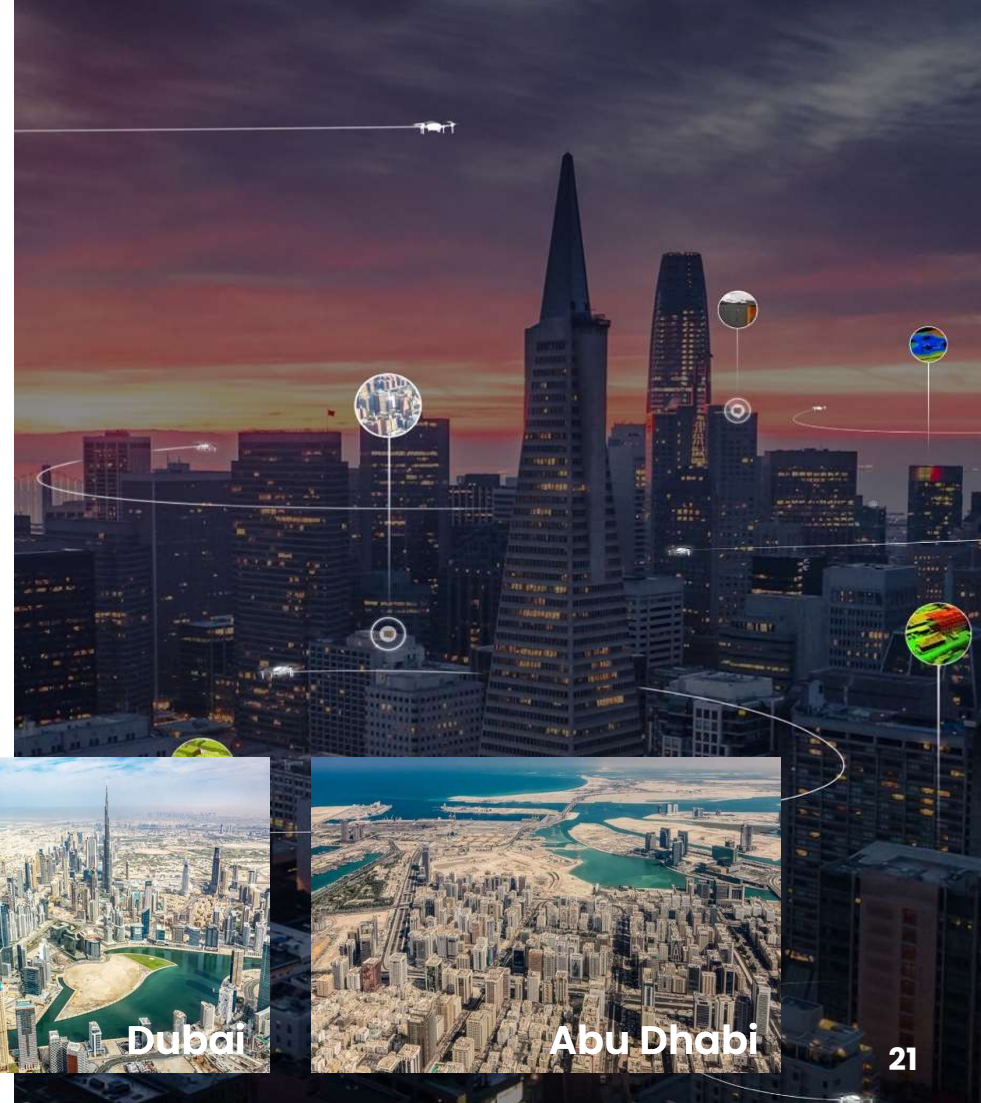
Expect ~50 systems to be deployed in Dubai & Abu Dhabi over next 2 – 3 years

Introduce and scale Optimus in US critical markets

- State government agencies
- Public safety & security
- Industrial verticals
- Construction management
- Defense



MORE TO COME...



Iron Drone Launched

Iron Drone acquisition closed | c-UAS system launched amidst significant customer interest

Key system features

- Fully automated pod and high-speed autonomous racer drones
- Physical kinetic drone capture with designated net; designated parachute to reduce collateral damage of interception
- Escort mode to avoid unnecessary interception
- System robustness and easy integration to any detection system

Physical capture preferred to frequency jamming

- In civil installations, a net capture system is safer
- Jamming impacts local private communications; introduces risk to on-ground assets and people

Well-suited from critical & highly-trafficked locations

- Sensitive government facilities: White House
- Critical infrastructure: Power plants, bridges
- High traffic locations: Stadiums, marathons, parades, public events
- Product attractive to Defense & HLS markets as well



The Raider System

Designed for 24/7 multi-drone protection



FULLY AUTOMATED DOCKING STATION



5 DRONE CARTRIDGE



AUTONOMOUS AI FLIGHT & LOCK



REUSABLE DRONES



NET & PARACHUTE LAUNCHER



**IRON
DRONE**



Advancing Iron Drone Raider

Demand for Counter-UAS solutions is accelerating

- **Advancing Raider development for Israeli Defense Force (IDF)**
 - Engaged with Israeli defense contractors to support integrated solution
 - Leveraging work connected to Israeli Innovation Authority grant received in August 2023
- **Unique and proprietary C-UAS solution to neutralize hostile drone threats**
 - Fully autonomous platform
 - Innovative, AI-driven capture capabilities
- **Large, growing market for Counter-UAS solutions**
 - TAM estimated at \$4.7 billion⁽¹⁾ by 2030 (24.7% CAGR)



(1) Market Future Research, October 2023

Regulatory Leadership

Industry leading approvals

- Historic FAA milestone in 2021 as first company approved for **truly autonomous ops (BVLOS)** in the US
- Awarded **Type Certification by FAA**; 2nd sUAS drone to achieve this, first designed for security and data collection
- Entered into initial cohort for **GreenUAS certification** program with AUVSI (BlueUAS equivalent)



AUTOMATED BVLOS

Seminal milestone in UAS industry announced by WSJ

Approvals for UAS operation with no human intervention

Protected by unique IP

TYPE CERTIFICATION

Rigorous process to obtain certification (pending)

Air worthiness designation allows for flight operations over people and in urban areas



BOARD MEMBERSHIP

Leading UAS Platforms Are Valuable

	 				
Markets	Industrial, Urban, Security, and Defense	Consumer, Infrastructure, Public Safety, and Defense	Package Delivery	Defense	Urban Air Mobility
Barriers to Entry	HIGH	LOW	MEDIUM	MEDIUM	HIGH
Estimated Market Size ⁽¹⁾	\$120B	\$71B	\$32B	\$35B	\$58B
Valuation ⁽²⁾	~ \$100M	\$2.2B	\$4.2B	\$8.5B	~ \$4.3B
Notable Investors		  	  	  	  

(1) Disclaimer: This list is not exhaustive; valuations may differ based on a multitude of factors

(2) Source: Estimates of total addressable market (TAM) based on various industry studies

(3) Source: CapitalIQ; Based upon last available public report as of December 31, 2023

Customer & Financial Activity

Significant revenue ramp demonstrates 2023 projected growth

- **Revenue growth commences**
 - Delivered \$9.0M revenue in 2023
 - Demonstrate platform adoption via fleet deployments; expanding global partnerships and customer pipeline
- **Fleet strategy scaling in The Gulf and Rest of World**
 - UAE governmental entity continues city-wide fleet expansion for public safety
 - Strategic alliance in Saudi Arabia to establish drone infrastructure
 - Additional country-level partnerships announced in India and Morocco
- **US expansion gaining traction; Tim Tenne appointed as new American Robotics CEO**
 - MassDOT POC and state-wide demonstrations launched representing initial foray with US customers
 - Marketing and customer qualification in U.S. progressing
 - Inventory production advancing availability for customers



Strategic Activity

Advancing Product & Ecosystem

- **FAA Type Certification advancing; supports scaling with customers globally**
 - Received noise certification approval for Airobotics Optimus-1EX drone system; marking the final major step towards completing Type Certification
 - Allows for complex aerial missions over people, roads and critical infrastructure accelerating and broadening market entry into the US
- **International expansion beyond UAE and Israel**
 - Announced partnership and initial marketing activity in India with **Aero A2Z**
 - Announced entry into Kingdom of Saudi Arabia via strategic alliance with **Saudi Excellence**
- **Driving public policy initiatives**
 - Appointed to Board of Directors of Commercial Drone Alliance (CDA); CDA, collaborates closely with key policymakers at FAA, DOT, White House, and Congress to educate and champion the future of the drone industry

GAINING TRACTION IN UNITED STATES

- MassDOT POC expected to lead to permanent installations
 - Marketing to critical infrastructure operators across Massachusetts
 - Showcase for other state DOTs
- Skyfire partnership for fast growing Drone First Responder markets
 - Accelerates Public Safety drone infrastructure opportunity
 - Targeting police, fire with state, local and federal organizations

More customers in pipeline...



Outlook for OAS

Revenue ramp continues; on track to achieve 2023 objectives

- **Grow revenue and orders**
 - Continue to deliver on fleet deployments in UAE; expect to announce additional orders in 2023
 - Expect to announce additional milestones relating to U.S. expansion of Optimus and Iron Drone Raider
 - Advance new market expansion with local partners in Saudi Arabia and India
- **Accelerate US business development**
 - Leverage American Robotics US footprint to penetrate public safety, smart city and O&G and other industrial markets
 - Expand sales teams and pre-sales activities with larger number of customers and ecosystem partners
- **Build inventory**
 - Expect 10 new Optimus Systems to be manufactured and delivered by Q4 2023
 - 15 systems are on order; additional inventory build expected for 2024



Closing – Record Year Ahead

Leverage winner-take-most platforms

- **Ondas is beginning to monetize the significant investments in FullMAXTM and Optimus platforms**
 - Activity with Siemens and Class I Rails highlights improved visibility around customer adoption and deployment timelines
 - Fleet deployments of Optimus demonstrate long-term leadership in massive markets; U.S. expansion opens huge market
- **Revenue growth and cost controls drive path to profitability**
- **Continue to advance and define the solutions in the large markets we target**





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