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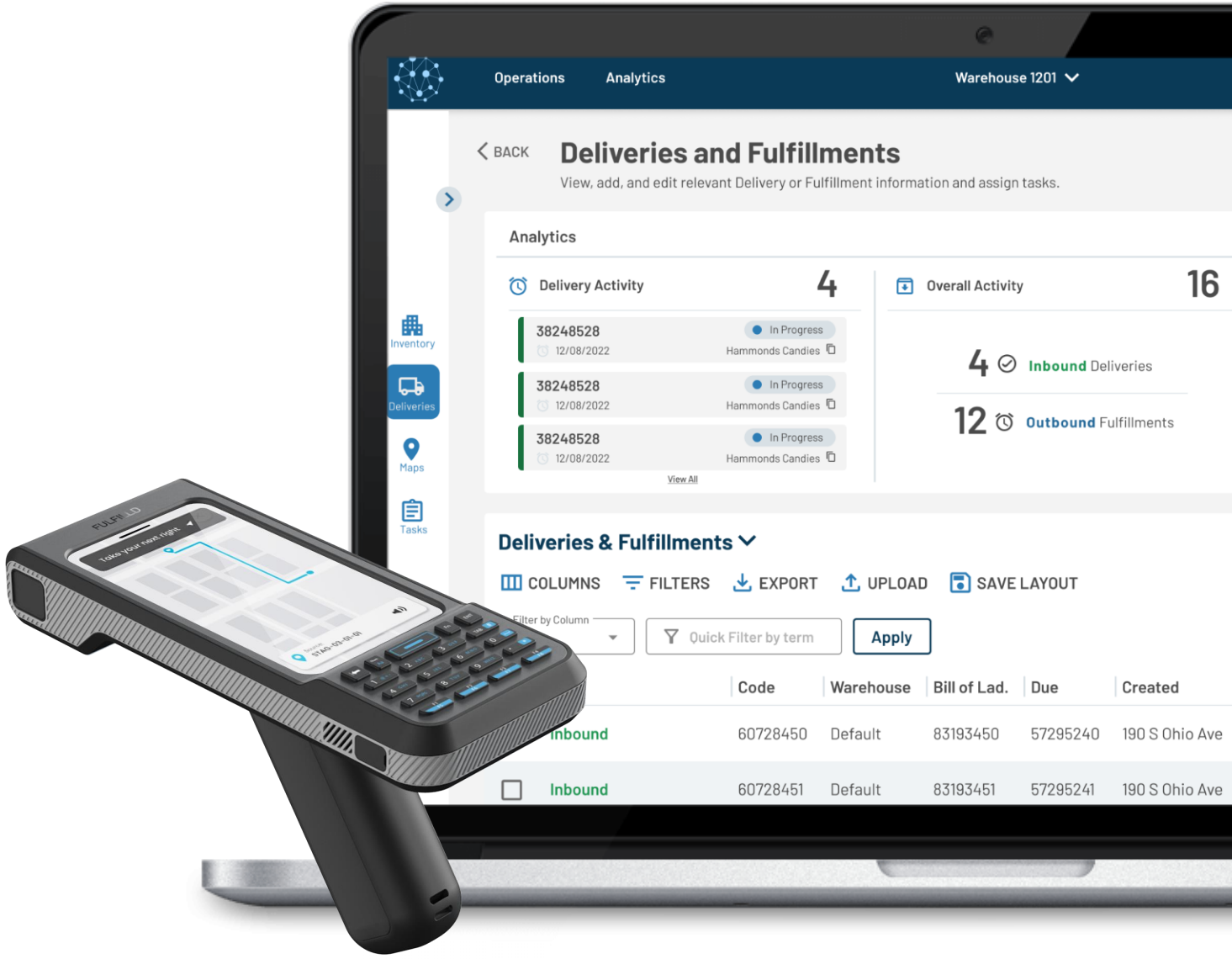
AI/ML BIN-PACKING ALGORITHM PROJECT



Project Opportunity

- Build AI/ML algorithm for VC-backed Start-up
- Gain real-world skills in Artificial Intelligence
- Learn from Fulfilld's Head of AI (PhD in AI/ML)
- Fulfilld is fast-growing Colorado-based Startup
- Strong innovative, collaborative, and creative team
- Opportunity for future employment

Project Details

- **Objective:** Design, code, build bin-packing algorithm(s) accounting for multiple factors including weight, dimension, etc. to determine best packaging size and pack sequence.
- **Scenario:** A given order has five line items and various quantities – what box should I use and how should I load the product?
- **Project:** Identify how an employee should load sold products in most efficient order (1st, 2nd, etc.) along with proper amount of packaging material into a shipping box.
- **Language:** AI/ML Vertex AI development (code in Python)
- **Team:** Work w/ Fulfilld team led by Head of AI Ken Kennedy, PhD

My internship at Fulfilld was an invaluable experience that I am so incredibly appreciative of! Not only was I able to learn how software development is done in the real world, but I was also able to work alongside some amazing and inspiring programmers who showed me that creating clean and efficient code was something to strive for.

I loved the time I spend with Fulfilld, and it truly set me up for my career moving forward with all of the skills I learned, as well as how to find a workplace culture that I fit into that would allow me to thrive, like the one at Fulfilld.

Cole Callihan, CS-Mines 2022 Intern and CS-Mines Adjunct Professor

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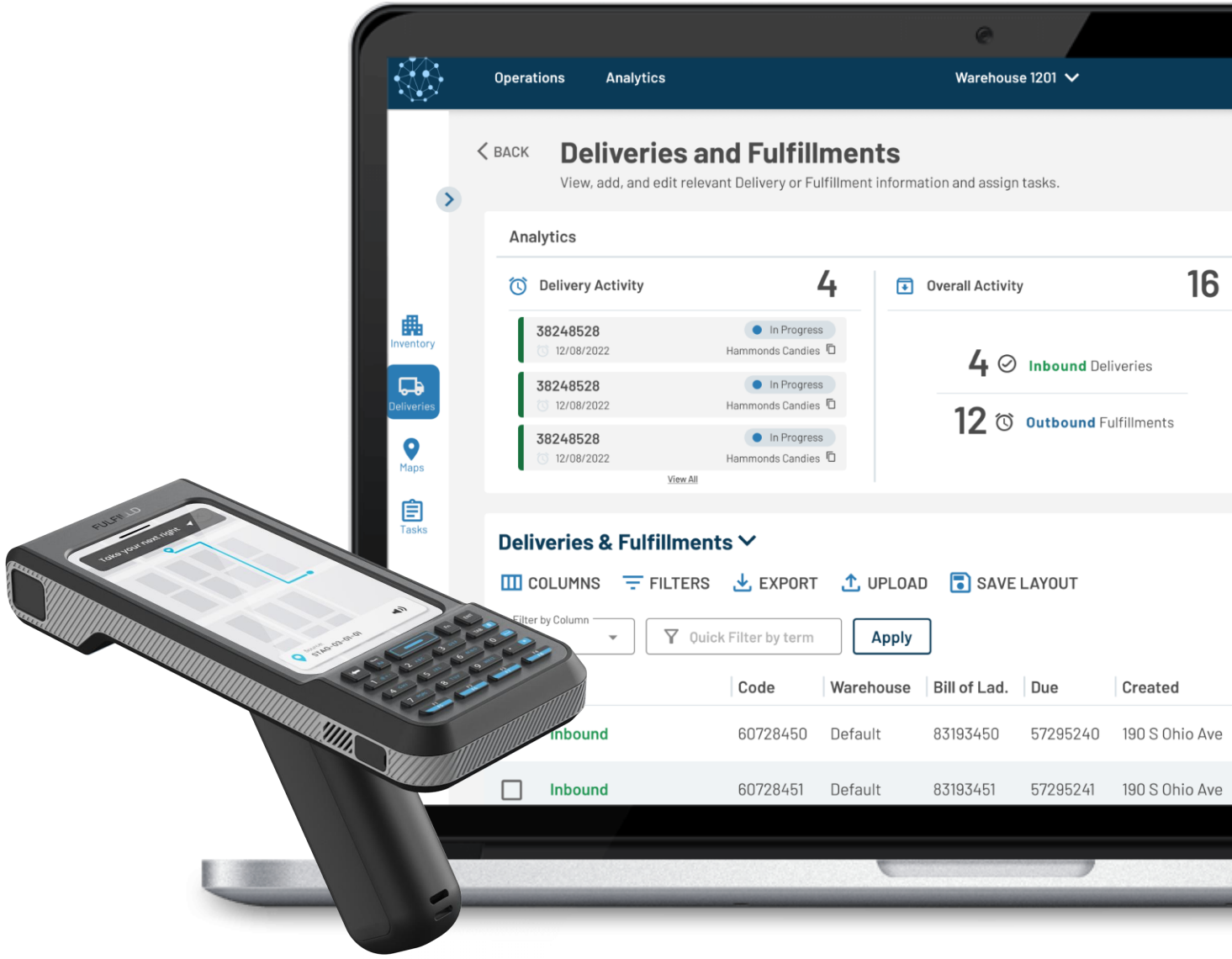
COMPANY BACKGROUND



Highlights

1st	First location-aware Generative-AI powered Warehouse Management Software (WMS) leveraging digital-twin
$8M	Total capital raised (@$21M valuation) w/ VC's including Heartland, TenOneTen, and Jeff Wilke.
2005	Founders have worked together since 2005 recently selling boot-strapped software/services company to Publicly traded Corp in 2018
$1.1M	Booked revenue to date including Lucid Motors, The Home Depot, GE Current, Hunter Douglas, etc.
$5.7B	Estimated TAM for warehouse management software by 2027 (CAGR of 14% since 2020)

Technology

Former Amazon exec invests in Denver warehouse technology startup

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Fulfilld co-founders Yosh Eisbart, Rick Fischer and Michael Pytel.
PHOTO CREDIT / FULFILLD

By Nick Greenhalgh - Reporter/Colorado Inno associate editor
Sep 9, 2021, 4:44pm EDT

IN THIS ARTICLE

Inno
Topic

Yosh Eisbart
Person

Michael Pytel

The Denver-based team behind warehouse management startup Fulfilld has brought on its first round of capital.

TenOneTen Ventures led the round, with other investors including European proptech firm Pi Labs, Colorado's Matchstick Ventures and Jeff Wilke, former CEO of Amazon's

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In the Room with Joyce McConnell, the first

Founders

4th Venture Together since 2005

Yosh Eisbart
Chief Executive Officer

Serial Founder / CEO. 2018: Sold boot-strapped NIMBL to PubCo 2008: Grew COMSYS SAP Practice from $3m to $30m in 3 yrs. 20+ Yr Leader. Mentor. Board Advisor.

Michael Pytel
Chief Innovation Officer

NIMBL Co-Founder/CTO. 2018: Sold boot-strapped NIMBL to PubCo. Globally recognized Tech Thought-leader. Author. Sought after conference speaker.

Rick Fischer
Chief Product Officer

20+ year Warehouse Systems and Operations subject matter expertise. Senior Business Process Warehouse Architect. Industry Recognized Thought-leader.

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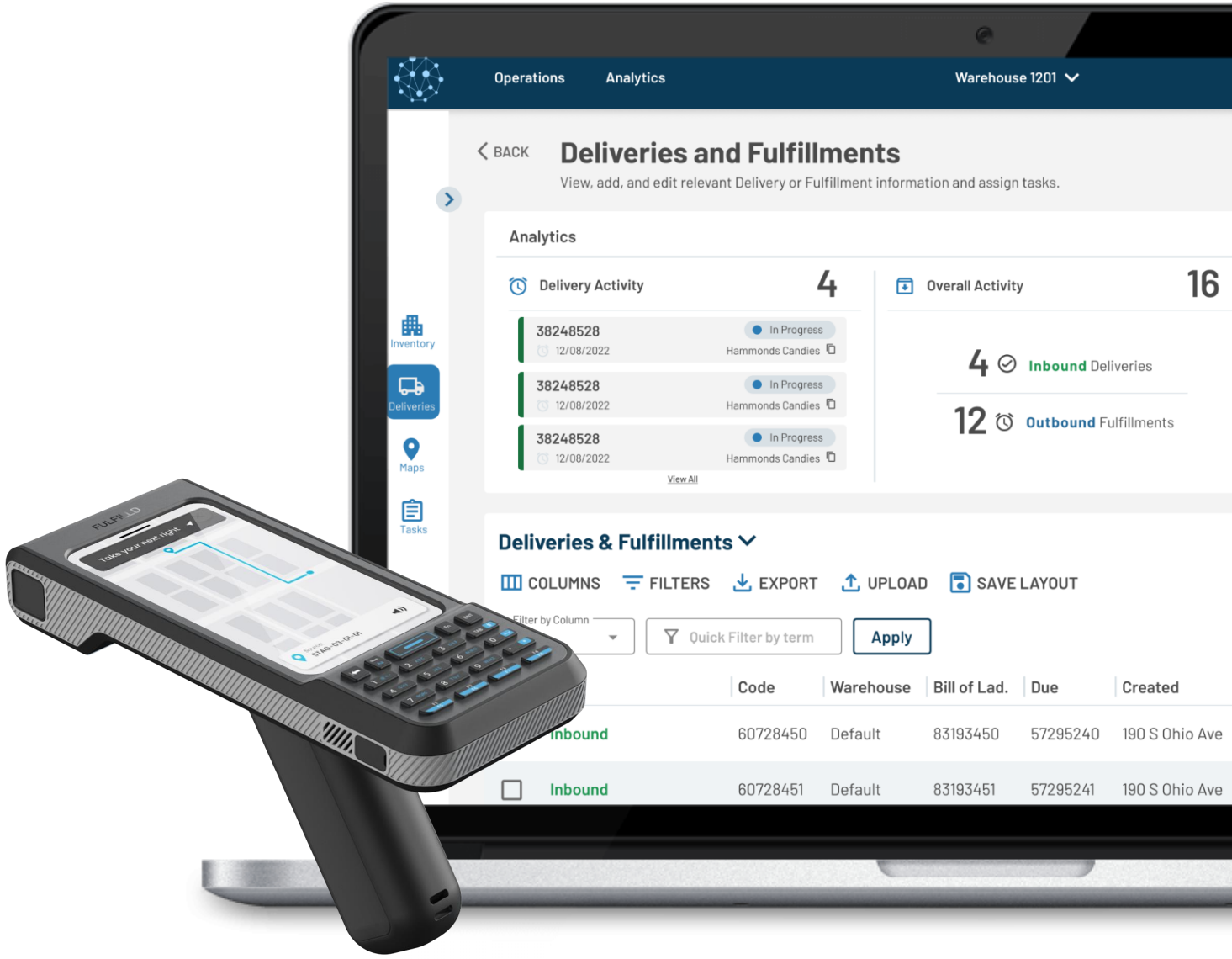
INTELLIGENT WAREHOUSE MANAGEMENT



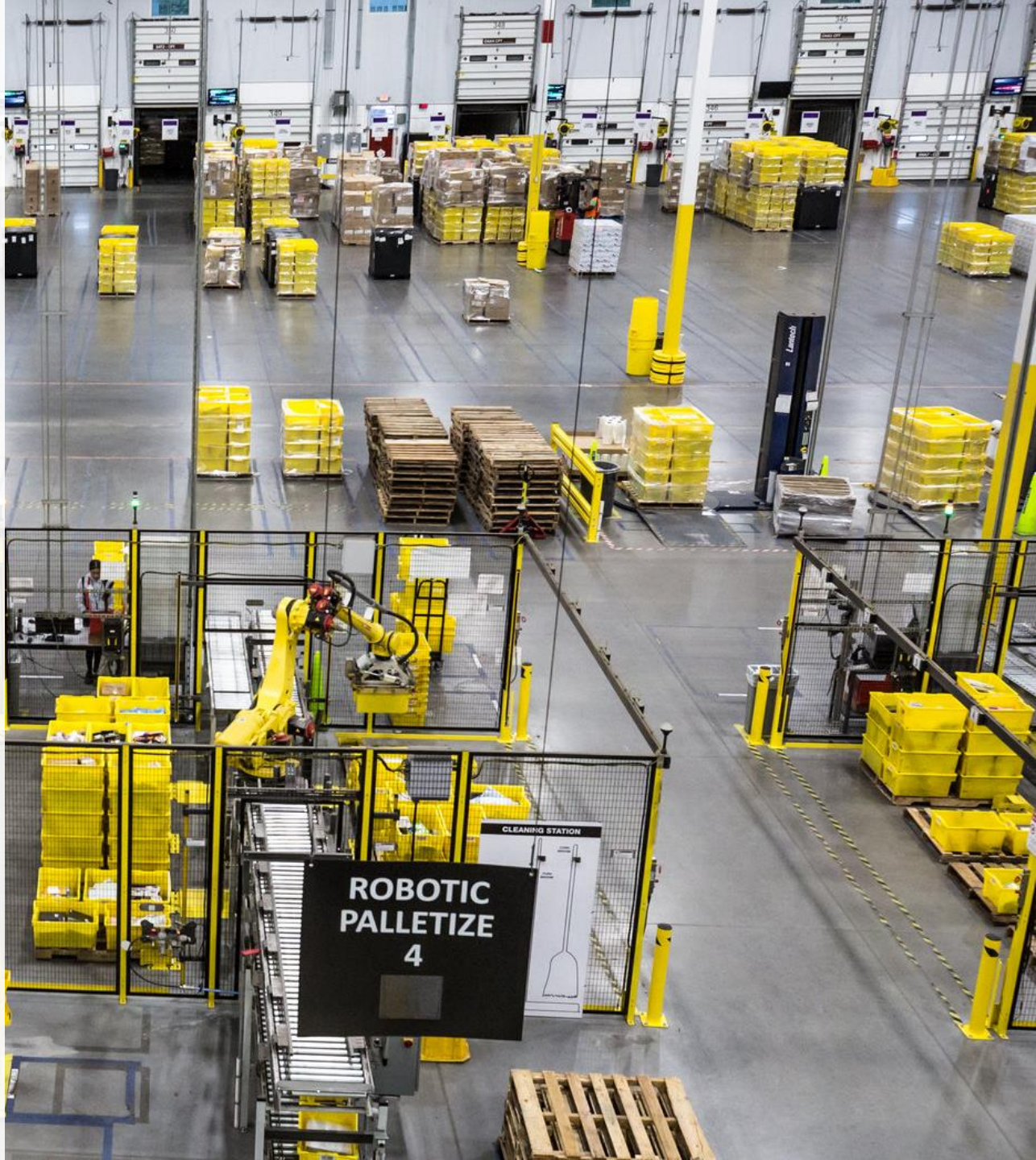
Driving Real World ROI*

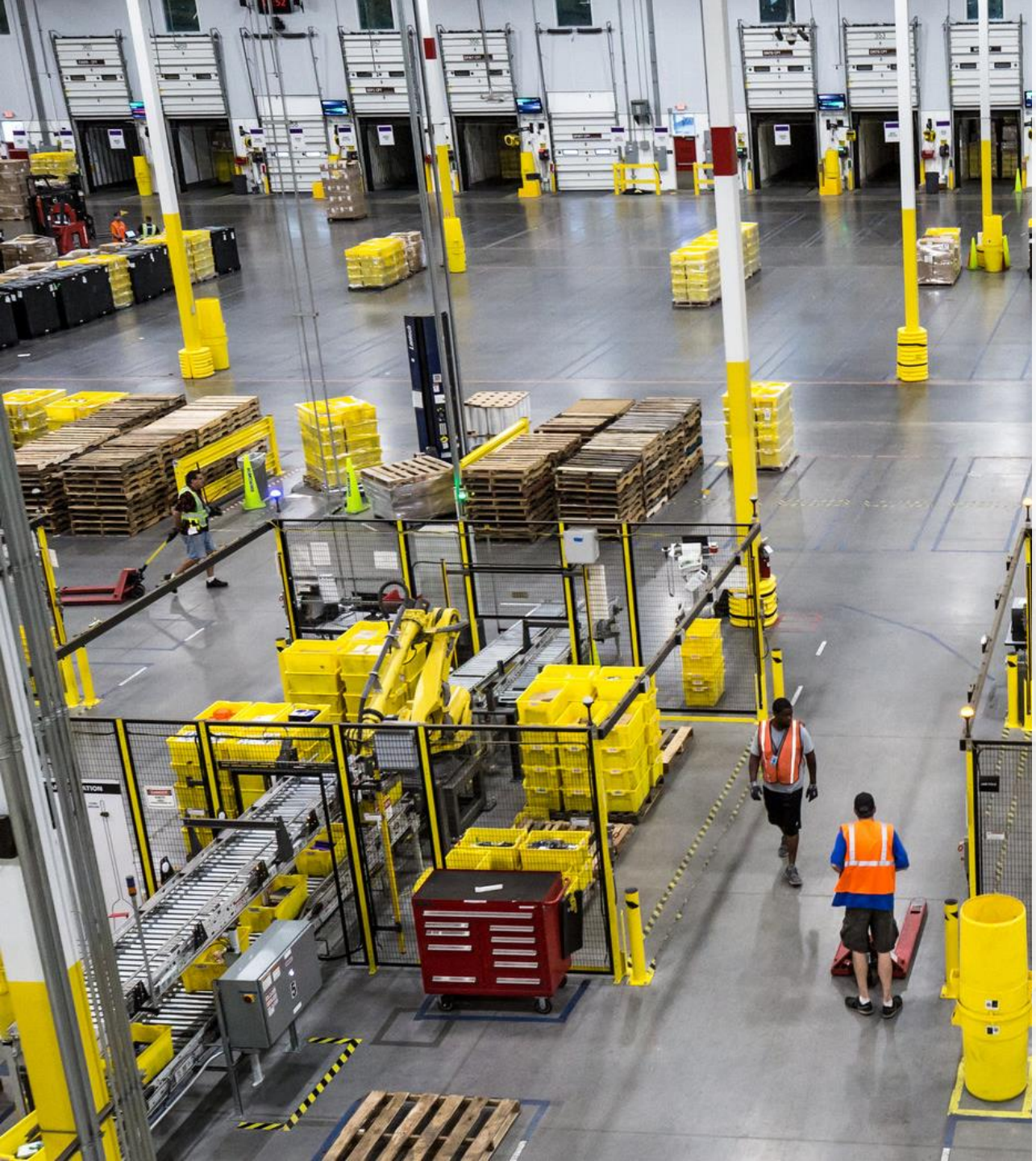
- Reduce Travel Time by 40%
- Increase Pick Efficiency by 50%
- Reduce Employee Ramp-up by 5 Days
- Reduce Inventory Planning by 80%
- Reduce Slotting Effort by 80%
- Increase Putaway Efficiency by 50%

*Estimated average metrics for typical Fulfilld customer.
Custom specific ROI dependent upon Customer scenario.

Core Features

- Warehouse Management
- Inventory Management
- Slotting Optimization
- Task Engine
- ERP Integrated (SAP, Oracle, MS, Sage)
- Machine Learning Decision Support



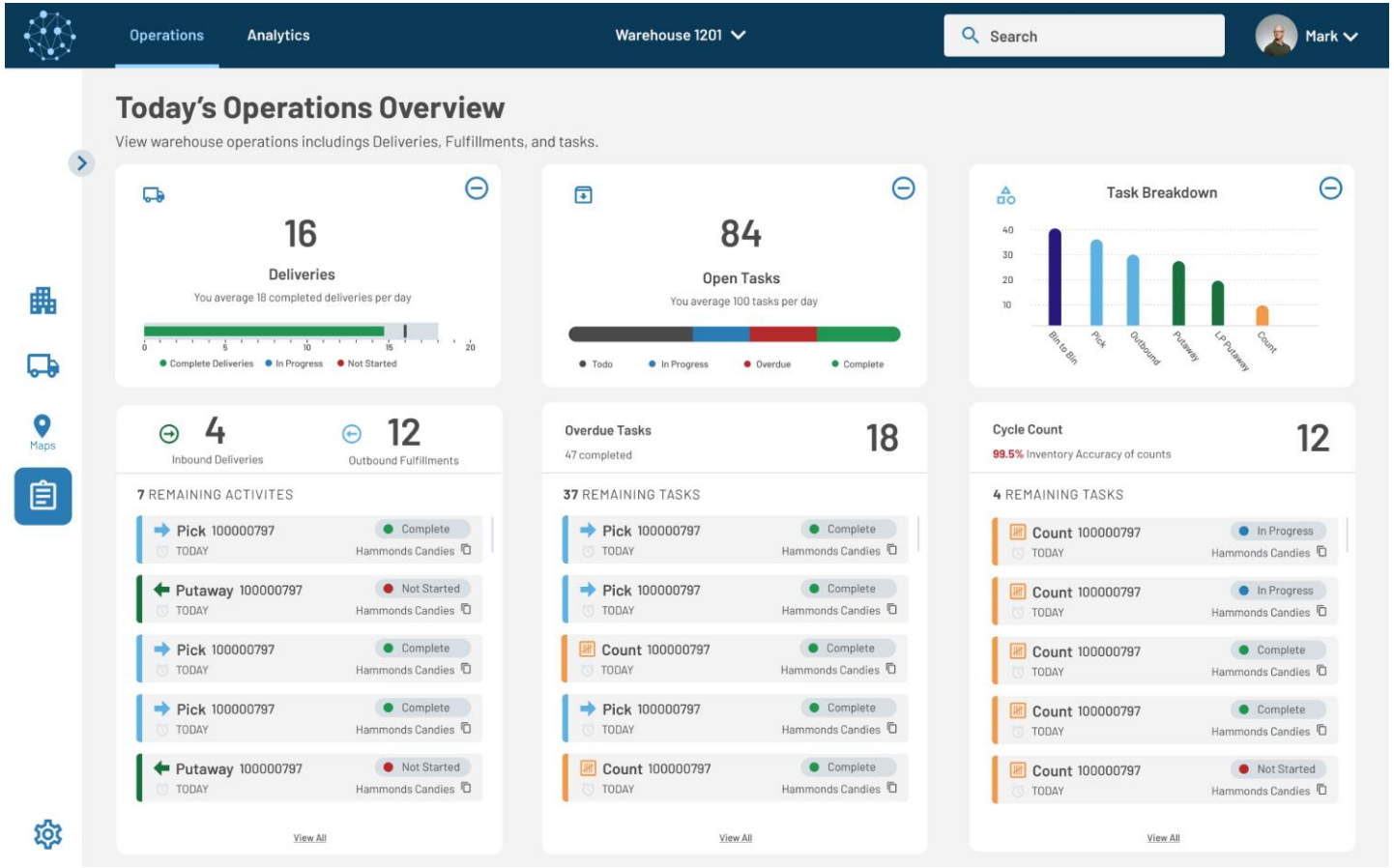


Features & Benefits

- Cloud Based & Auto-Scaling
- Digital Twin Ready
- Software & Hardware Included
- Low Total Cost of Ownership
- Module based
- Real-time APIs to ERP

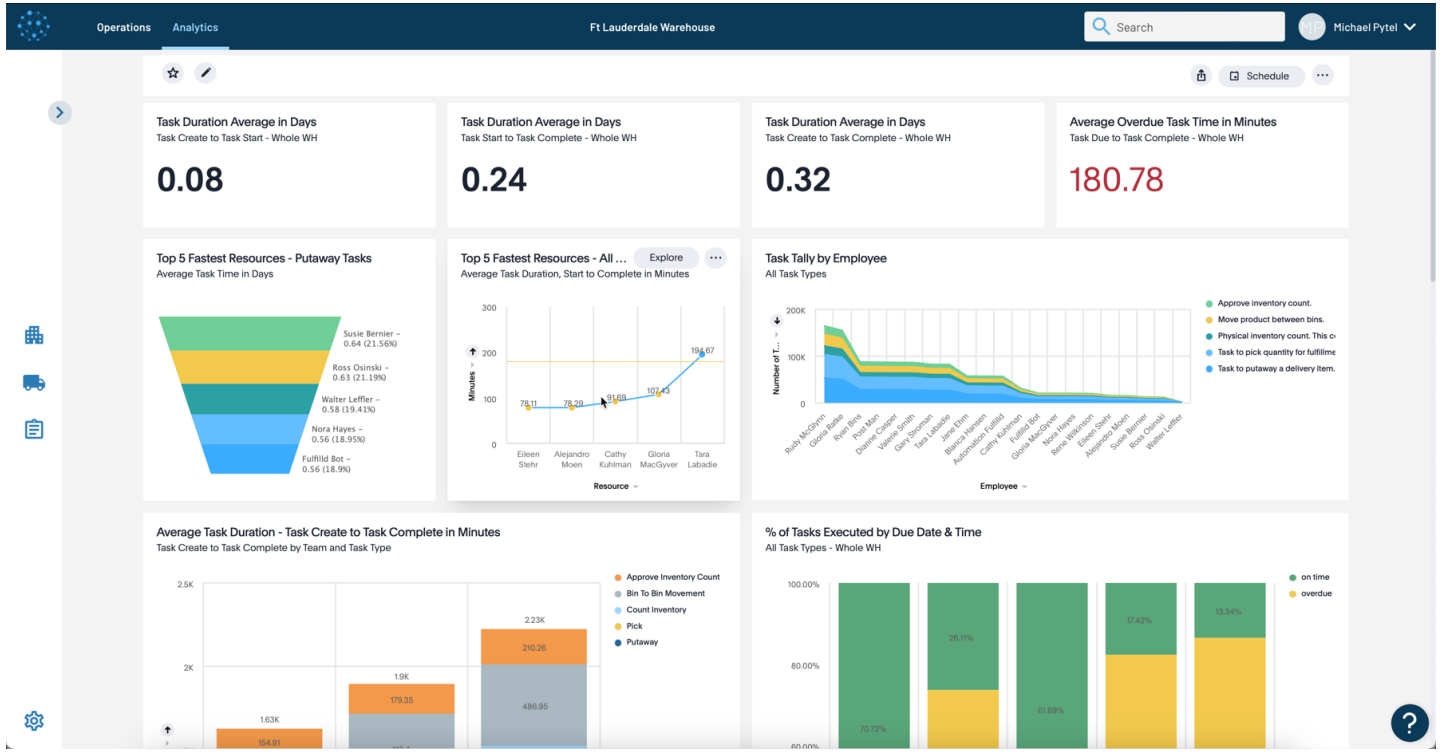
Web Application

- User:
  - Warehouse Management
  - Leadership (CFO, CIO, VP, etc.)
- Highlights:
  - Operational Dashboards
  - Manage by Exception
  - System-recommended Approving
  - Heat-Mapping
  - Embedded Analytics
  - Master Configuration



Advanced Analytics

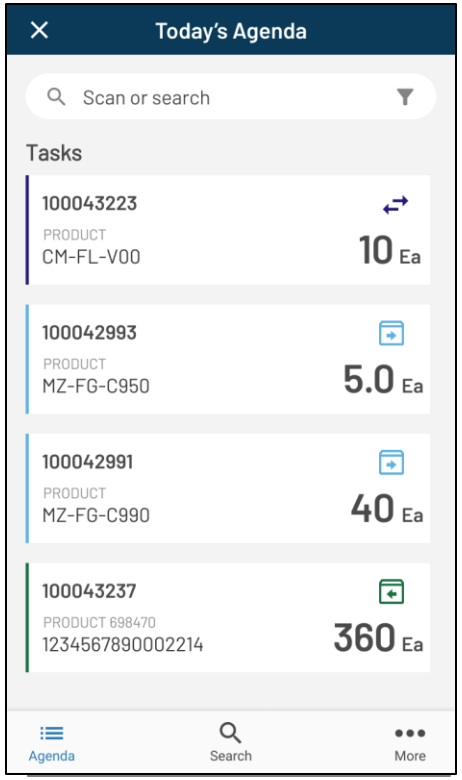
- User:
  - Warehouse Management
  - Inventory Control
  - Continuous Improvement
  - Leadership (CFO, CIO, VP, etc.)
- Highlights:
  - Analytic Dashboards
  - Automated Insights
  - Modify Dashboards
  - Export & Share
  - Independent Data Exploration



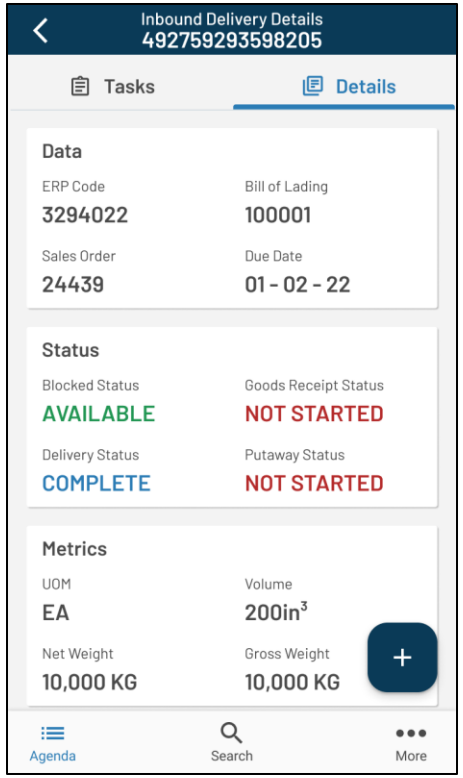
Mobile Application

- User:
  - Warehouse Worker
- Highlights:
  - Can be deployed on existing Scanners
  - Intuitive consumer-grade UI
  - Prioritized agenda
  - Real-time system directed tasking
  - Digital Assistant (“Hey Phil…”)
  - Route guidance
  - Location aware

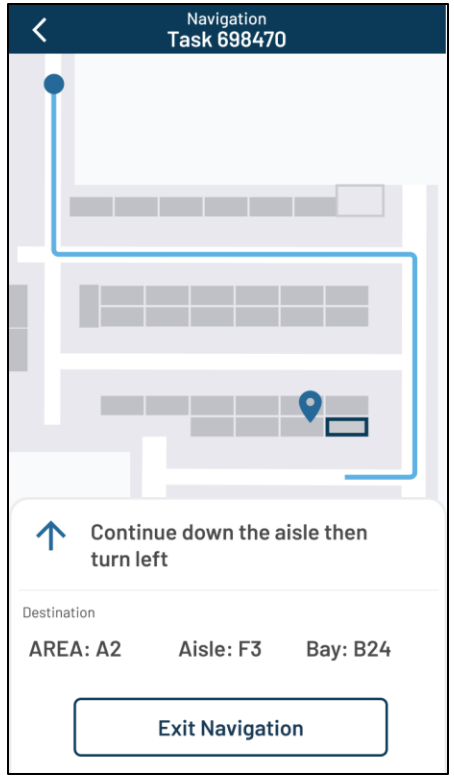
Location Based Task Assignment



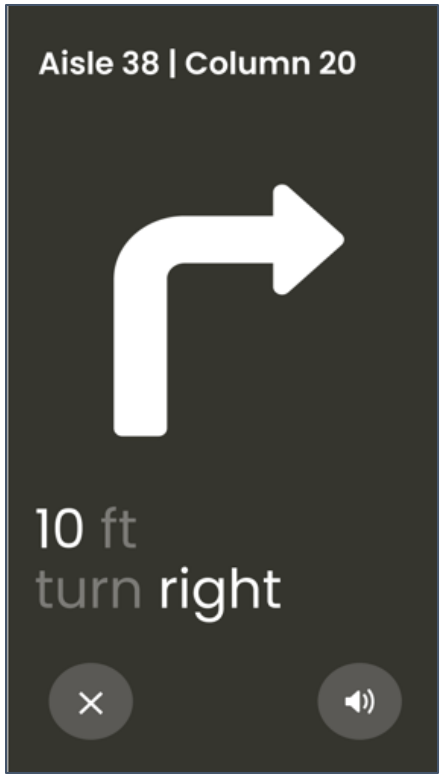
Tasks Organized By Location & Priority



Tasks for Each Movement



Natural language guidance



Turn-by-turn navigation

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Contact Info

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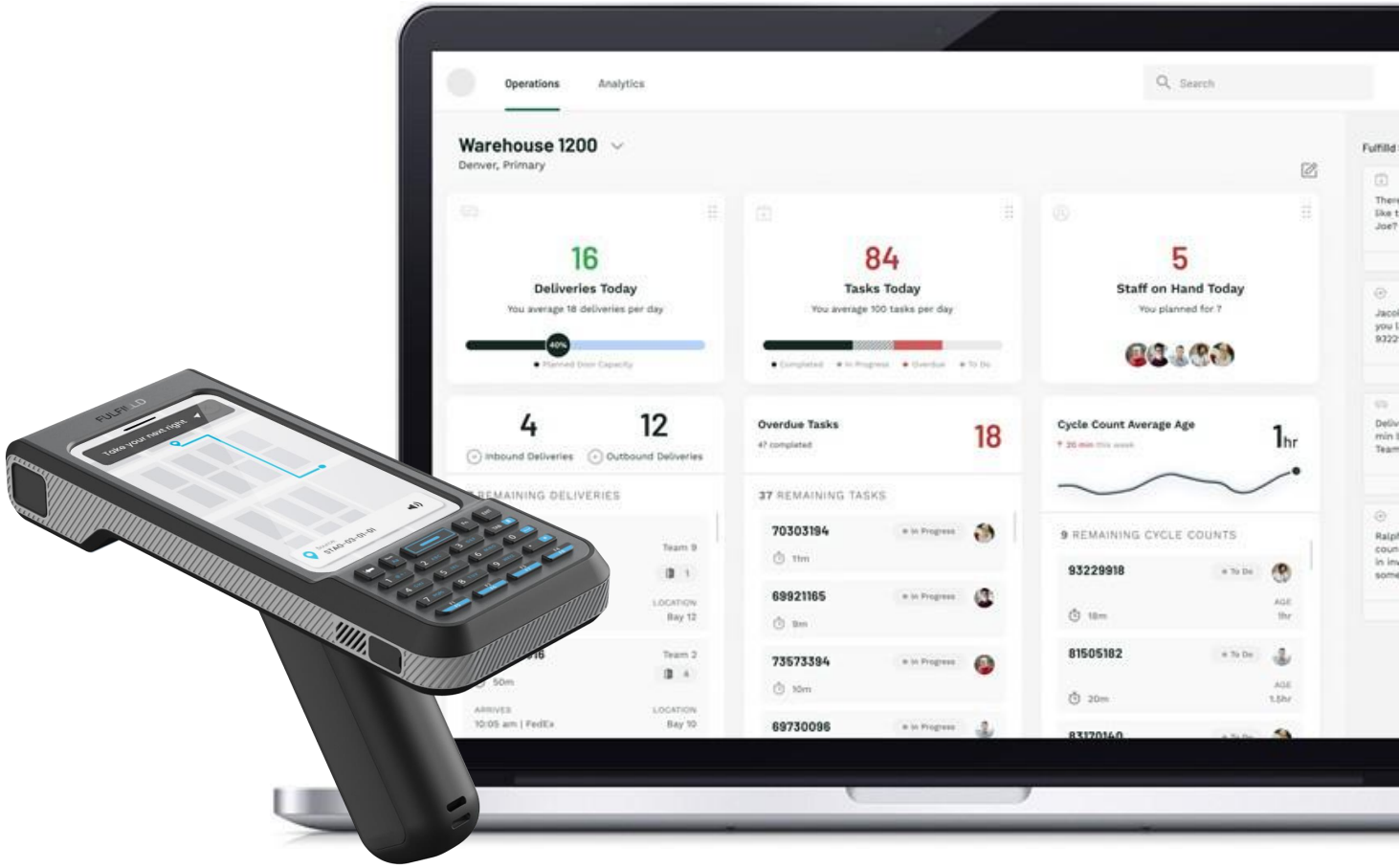
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