AETHON
CONNECTING ISLANDS OF AUTOMATION
ALDO ZINI, CEO
About Aethon

Who We Are

World leader in autonomous mobile robotic solution for intralogistics.

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<th>Founded in 2004</th>
<th>HQ in Pittsburgh, PA</th>
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<td><strong>Leading</strong></td>
<td><strong>Reliable</strong></td>
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<td>over 140 live sites, 500 TUGs.</td>
<td>2.5 Million miles and 20 million deliveries</td>
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<td><strong>Multi-Industry</strong></td>
<td><strong>Complete</strong></td>
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<td>Experience in manufacturing, healthcare &amp; hospitality</td>
<td>Robot plus a wide array of enabling technology</td>
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Selected Customers:
- BOSCH
- Continental
- DELPHI
- HERSHEY
- Panasonic
- SEAGATE
- P&G
- flex
- Boston Children's Hospital
- El Camino Hospital
- Kaiser Permanente
- NYU Langone Medical Center
- PARKVIEW HEALTH
- UCSF
- UPMC
About Aethon
What We Do

We move essential materials to automate internal logistics

Inventory → Use

in multiple industries:

Warehouse  Healthcare  Manufacturing  Hotels
Market trends and catalysts

Major Robotic Trends

Robots that are...

$1B by 2020
50% CAGR
- ABI Research

$10B by 2020
16% CAGR
- Markets & Markets

$15B by 2019
22% CAGR
- BCC Research

Source: Boston Consulting Group – Industry 4.0: The Future of Productivity and Growth in Manufacturing Industries
Market trends and catalysts
Today’s Islands of Automation

- Production is automated
- But, material movement still manual
- In LEAN terms, this is “waste”
- Connect all phases of production
- Smart navigation is needed
- Deliver to point of use
Autonomous Mobile Robots (AMRs) are Different Than AGVs

Distinction between technology

AGVs

AMRs
Continental Implementation
Industrie 4.0
Robots Working With Systems @ BOSCH

**ERP / MES System**
Software system that is managing production processes and inventory movement.

**Core inventory transaction system**

**Task routing to correct robot system**

**Bosch iHub**
Middleware with business rules that will send job to appropriate automation system and communicate completion.

**Variety of automation modalities to automate material movement.**

**Automated Forklift**

**Conveyance**

**AMRs**

**AGVs**

**Each modality needs to accept task and communicate result.**
Industrie 4.0
TUG Robots Working With Systems @ BOSCH

ERP / MES System
Software system that is managing production processes and inventory movement.

Bosch iHub
Middleware with business rules that will send job to appropriate automation system and communicate completion.

iHub sends tasks to TUG Fleet Manager.

TUG Fleet Manager assigns and manages robots.

TUG Robots
Autonomous delivery of carts and racks.

TUG Fleet manager
The control server for TUG robot fleet. Job initiation and completion control, delivery and drop off control, best unit, best routes, power management, mapping.
Industrie 4.0
Robots Working Within Building

TUG controls

- Touch screen
- Fixed and mobile devices provide simple worker interaction with fleet. Send or request TUGs and track the robots in real-time.

TUG Fleet manager

- The control server for TUG robot fleet. Job initiation and completion control. Delivery and drop off control, best unit, best routes, power management, mapping.

TUG environment integration

- Elevator control allows TUG to ride elevators.
- Door controls allow automatic opening of doors.
- Alarm integration allows the TUG to respond to safety alerts.
Industrie 4.0
Robots Managed via (Private or Public) Cloud

Patented command center

- Secure Private or Public Cloud
- Status Algorithms
- Remote Operation
- 24/7/365 Support
- Operational Analytics
- Software Upgrades

AUTOMATE
Positive & successful experience in Bosch plant and at other sites.

AMRs are different than AGVs. Autonomous & connect islands of automation.

Robust navigation is a given. Enabling technology is the difference.
THANK YOU
Questions: azini@aethon.com