THE SOFTWARE PLATFORM
FOR SEAMLESS ORCHESTRATION
OF AUTONOMOUS ROBOTICS

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WE ARE SHAPING THE AUTONOMOUS FUTURE BY ENABLING AUTONOMOUS ROBOTICS APPLICATIONS FOR ENTERPRISES AND INDUSTRIES

15 Live Projects  10 Countries Deployed In  10 Major Awards

+30 Ecosystem Partners  25 Employees

INVESTED BY:  FEATURED BY:

THUMS

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The Challenge

FRAGMENTATION OF ROBOTICS

AUTONOMOUS DRONES AND ROBOTS ARE GOING TO REACH A CEILING IN THE EFFICIENCIES THEY PROVIDE TO BUSINESSES

- Each robot runs on different proprietary hardware and software
- Drones and robots cannot function together using the same language
- Network interoperability is a challenge preventing scalability in deployments

18M industrial robots

17M commercial drones

(Oxford Economics) (GSMA)
Our Solution

Enhance the Entire Ecosystem Through:

ONE PLATFORM

to autonomously deploy, control, and orchestrate fleets of robots and drones

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How Our **Software Platform** Solves this Fragmentation

1. **Control** off-the-shelf commercial robots
2. **Connect** them to the central platform
3. **Fuse** data from various systems
4. **Enable** autonomous applications at scale

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Mobile robots such as AMR’s, UAV’s, AGV’s require wireless communication and computational resources. Combining and optimizing computational resources using edge computing in combination with secure network environments for connectivity such as 5G enables secure and add scale deployment of robotic swarms.

**Key 5G Features**

- Time sensitive applications
- Data sensitive applications
- Ultra reliable Low Latency Communications (uRLLC)
- Quality of Service
- Local Policy
- Enhanced Mobile Broadband (eMBB)
- Higher Fidelity for features (i.e. 3D sensing and object recognition)
- More Intelligence on the EDGE
- Larger number of devices as an autonomous swarm
- 3D sensing, Local mapping, human detection, routing
- Big Data/ AI processes
- Navigation
- Voice, Image, Object recognition
- Motion control, collision avoidance
- Emergency mission

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**E2E Latency**

**Reliability**

**5G Mobile EDGE Computing**

**Peak Data Rate**

**Data Volume**

**Service Deployment**

**Energy Efficiency**

**Connected Devices**

**Network slicing**

**Data privacy**

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**Security**

**Ultra Trust**

**Critical Connectivity**

**Emergency mission**

**Quality of Service**

**Reliability**

**Mobility**

**Big Data/ AI processes**

**Navigation**

**Voice, Image, Object recognition**

**3D sensing, Local mapping, human detection, routing**

**Motion control, collision avoidance**

**Emergency mission**
## Functional Architecture Layers

<table>
<thead>
<tr>
<th>L7</th>
<th>User Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>L6</td>
<td>Business Information Systems</td>
</tr>
<tr>
<td>L5</td>
<td>Mission Management</td>
</tr>
<tr>
<td>L4</td>
<td>Decision Management</td>
</tr>
<tr>
<td>L3.B</td>
<td>Data Management</td>
</tr>
<tr>
<td>L3.A</td>
<td>Device Management</td>
</tr>
<tr>
<td>L2.B</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>L2.A</td>
<td>Network</td>
</tr>
<tr>
<td>L1.C</td>
<td>Device Integration</td>
</tr>
<tr>
<td>L1.B</td>
<td>Logical Device Control</td>
</tr>
<tr>
<td>L1.A</td>
<td>Devices</td>
</tr>
</tbody>
</table>

### Core Functions

- **Orchestration**: Simplified Autonomous Mission Design / Configuration / Management capability via Unmanned Life UI
- **AI Decision Making**: Advanced, heterogeneous, real-time decision making using proprietary integrated algorithm suite
- **Sensor Data Fusion**: Real-time on-board and external sensors sensor data-fusion for situational awareness, mobility control
- **Swarm Control**: Orchestration and coordination of multiple types of robots and IoT devices, to work together in real-time

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Unmanned Life’s Applications

**Sustainability**
- Reforestation
- Wildfire Mitigation
- Emissions Detection

**Security**
- Surveillance
- Emergency Response
- Asset Inspections

**Supply-chain**
- Smart Manufacturing
- Smart Logistics
- Last Mile-delivery

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Introducing New Use Cases – Traditional Approach

**Use case A**
- NEST Charger A
- Controller A
- Controller A*
- Software A
- Interface A
- Integration A

**Use case B**
- NEST Charger B
- Controller B
- Controller B*
- Software B
- Interface B
- Integration B

**Use case C**
- NEST Charger C
- Controller C
- Controller C*
- Software C
- Interface C
- Integration C
Platform Approach With Unmanned Life

Use case A
- NEST Charger A
- UL-ACE

Use case B
- NEST Charger B
- UL-ACE

Use case C
- Charger C
- UL-ACE

TELCO

UL-ACE

UL-CCP

UL-WEB

API

5G 4G LTE

MEC

Integrations

UL

Platform

Interface

UL

UL

UL

Ul

TELCO

Integrations

UL

Platform

Interface

UL
Benefits Of A Platform Approach

**Scalability**
- Modular across applications, meaning the same system can be used across several use cases
- Reduced integration cycles
- Unified interface
- Centralised data management

**Security**
- Layered safety mechanisms
- Platform-level best practices
- Platform already vetted by telcos and critical infrastructure companies

**Less dependency on hardware and vendors**
- Hardware agnostic
- Platform supports entire robotic roadmap
- Quickly add applications to existing systems and processes