MILITARY BASE
OF THE FUTURE

NORM BALCHUNAS

Honeywell
AGENDA

1. Introduction
2. Current State of Technology
3. Honeywell Forge for Defense
4. Digital Depot
5. Airfield Ramp Management
6. Voice Solutions
7. Asset Management & Tracking
8. Energy Management
9. Building Controls & Management
TODAY MODERN MILITARIES SEEK TECH SUPERIORITY TO OUT-INNOVATE ADVERSARIES.

Military bases and processes from the 1970s are ready for a refresh. Enter the base of the future, which harnesses seamless connectivity across military operations to create a strategic edge that can make the difference between mission success and failure.
# CONNECTED TECHNOLOGIES

## Commercial

<table>
<thead>
<tr>
<th>CONNECTED AIRCRAFT</th>
<th>130K Total Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONNECTED VEHICLES</td>
<td>100M Global Installed Base</td>
</tr>
<tr>
<td>SMART PLANTS</td>
<td>10K+ Global Installed Base</td>
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<tr>
<td>SMART WORKERS</td>
<td>550M Global PPE Users</td>
</tr>
<tr>
<td>SMART HOMES</td>
<td>150M Global Installed Base</td>
</tr>
<tr>
<td>DIGITAL BUILDINGS/CITIES</td>
<td>10M Global Installed Base</td>
</tr>
<tr>
<td>DIGITAL SUPPLY CHAIN</td>
<td>Large Global Installed Base</td>
</tr>
</tbody>
</table>

## Defense

- **C6ISR** Command, Control, Computers, Communications, Cyber-Defense, and Combat Systems and Intelligence, Surveillance, and Reconnaissance
- **CONNECTED** Aircraft
- **CONNECTED** Battlefield
- **DIGITAL MAINTENANCE:** Health & Usage Monitoring, Diagnostic, Prognostic
- **DIGITAL** Aircraft Carriers
- **HONEYWELL** Forge Ramps
- **DIGITAL** Airfields
- **DIGITAL** Depots
ENTERPRISE APPROACH

Platform Management
- Connected Maintenance
- Diagnostic/Prognostic
- Digital/Smart maintainers
- Ground Handling
- Cargo management (cradle to grave)
- Asset management

Command and Control
- Real Time/Near-Real Situational awareness
- Platform tracking
- Command and Control Platform (CoP)
- World-wide connectivity
- Resiliency

Smart Buildings, Cities, Bases, Factories, Hangars
- Digital Airfield Ramps
- Smart workers/people
- Energy Efficiency
- Facility Management

Digital Depots
- Logistics management
- Persistent Logistic chain visibility
- Asset management
- Voice solutions
- Digital technical orders
SOLUTIONS

DIGITAL DEPOTS
Tailored Solutions

ASSET/WORKER TRACKING
Passive RFID
Active RFID
Connected Freight

BUILDING CONTROL AND MONITORING
Tridium - Niagara

VOICE SOLUTIONS
Vocollect
Smart Workers

ENERGY MANAGEMENT
Connected Buildings | Energy Efficiency

Honeywell Forge Ramp

AIRFIELD RAMP MANAGEMENT
Honeywell Forge Ramp
HONEYWELL FORGE
How It Works | High Level Technical Overview

Honeywell Forge For Defense

<table>
<thead>
<tr>
<th>Modules</th>
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<tbody>
<tr>
<td>Consumer Grade User Apps</td>
</tr>
<tr>
<td>API As A Service (APlaas)</td>
</tr>
<tr>
<td>Intelligent Model Framework</td>
</tr>
<tr>
<td>Secure Connectivity</td>
</tr>
<tr>
<td>Edge Platform</td>
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</tbody>
</table>

Defense Value
- **BLUF:** Hardware and Software Agnostic
- Closed loop execution; quick and reliable worker training and safety
- Open APIs extend the solution to customers’ and partners’ own applications
- More accurate advisory and benchmarking; cross-industry; reliable operations decision making
- Eliminate IT need to manage connections across fleet
- Action-oriented: Alerts to engineering; insight to dispatch; customer queries & dashboards

**Secure, Private Network OS**

**PREDICTIVE MODELS**
Maintenance: Safety, Fuel, Flight Efficiency, Ground

**MACHINE LEARNING ENABLED**
Continual learning models; Manage change across the portfolio

**OPEN INTELLIGENT GATEWAY**
Secure, Private Network OS

**API ENGINE**
Metadata Search for Assets, People and Processes

**APIAsS**
FIND
CONTROL

**Cloud**
Secure WiFi, LTE or Broadband Connection

**Secure Connectivity**
Near real-time connections, easy to install without need for UID/password/VPN requirements

**Edge Platform**
Connects all aircraft systems that is OEM agnostic and airline databases

**API As A Service (APlaas)**
Partner/OEM enablement with IP protection; ease of integration & migration

**Intelligent Model Framework**
Runs 3rd Party and Honeywell models

**Honeywell Forge For Defense**

**Consumer Grade User Apps**
Intuitive applications for quick user adoption

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Near real-time connections, easy to install without need for UID/password/VPN requirements

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What’s Included?

- Honeywell FORGE as the connective tissue
- Fully agnostic approach – Software/Hardware
- Asset tracking software platform (web /and mobile)
- Highly scalable software modules for incremental deployment
- Application Programing Interfaces for ERP integration
- Honeywell Forge based cloud data analytics for actionable insights
- Command and Control Platform (Service-wide CoP / Command Wall)
- Parts tracking hardware infrastructure (Aero grade RFID systems)
- Training & Customer Support
- Consultation Services

What’s in the box

Accelerate Aircraft Turnaround Times And Reduce Mission Delays!

Track assets, automate workflows for material, labor and overhead inventory cost optimization

Asset volume based software subscription tiers. Consultation & parts track hardware infrastructure support. Aero grade RFID systems

Integrated asset tracking solution across logistics value chain with cloud based data analytics, ERP integration for actionable insights

DIGITAL DEPOT
HONEYWELL FORGE RAMP

Provides actionable information to ramp operators and ground crew to

ACCELERATE AIRCRAFT TURNAROUND TIMES
AND REDUCE MISSION DELAYS.

Real Time Asset Management and Optimization
**Strategic Advantage**

What makes our solution unique and differentiated?

**5+ GENERATIONS**
Over 25+ years of expertise in voice recognition hardware & software

**SPEECH RECOGNITION**
World-class built for noisy environments

**SOLUTION CHOICE**
Wired & Wireless headset, chargers, and accessories

**CRAFTSMANSHIP**
Ruggedized, better than military grade

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Ruggedized, better than military grade

**WMS EXPERTISE**
Integration & Know How

**CUSTOMER EXPERIENCE**
24x7 Tech Support & Professional Services
**CONNECTED WORKER AND PEOPLE**

**COMPETENCY SOLUTIONS**

1. **OPERATION GUIDANCE**
   - Operator task automation

2. **OPERATION SUPPORT**
   - Remote Expert

3. **KNOWLEDGE ACCESS**
   - RT Access to DCS data and technical documents

4. **AUGMENTED REALITY**
   - On the job training and operation support

5. **ANALYTICS**
   - Productivity mgmt. and Continuous competency assessment

6. **SIMULATION BASED LEARNING**
   - VR training and CR operator training

**PRODUCTIVITY & SAFETY SOLUTIONS**

- Connectivity pre-requirement: Wifi, access to database, Intrinsically safe, access to cloud

- **DATABASES ACCESS**
  - Historian, SAP, Excel, Access, etc...

- **INTELLIGENT WEARABLES**
  - MOBILE DEVICES

**VIDEO ANALYTICS**
- Procedures recording and sharing and vision analytics for compliance

**COMPETENCY PROGRAMS**
- Workforce Training and certifications

*“Making any knowledge and competency accessible in any shape or form to the operator in real time for better decision making and higher execution capability”*
CONNECTED LOGISTICS

- A comprehensive asset tracking and logistics data capture solution
- Employs multiple tracking and productivity technologies, such as RFID, Bluetooth, telematics, and Voice collection – from simple part tracking to multiple asset types
- Integrates multiple tracking solutions into a single user interface (dashboard) to provide customized metrics and analytics
- Provides the ability to integrate with existing ERP systems to maximize automation
- Fully secure
- Compatible with other Honeywell Connected Aircraft solutions, such as GoDirect Connected (predictive) Maintenance
- Enables operators to reduce labor, overhead and material costs associated with sub optimized asset tracking and lack of digital information for analytics and actionable insights

DIGITAL TRANSFORMATION OF YOUR PHYSICAL ASSETS TO ENABLE INDUSTRIAL INTERNET OF THINGS (IIOT)
INFORM & CONTROL - RIGHT PARTS AT THE RIGHT PLACE AT THE RIGHT TIME
# CONNECTED LOGISTICS

## HONEYWELL
Single Pane of Glass; Integrated Cloud-Based Analytics for Actionable Insights

### GO DIRECT
- Passive RFID
- Active RFID
- Active RFID w/ GPS
- Connected Freight (Bluetooth)
- GSE Telematics
- GSE Telematics
- Operational Intelligence™
- Honeywell Aero Edge Node
- Vocollect™ Voice

### WAREHOUSE & PARTS LOGISTICS
- MRO
- Integrated Supply Chain
- Data Scientists
- Knowledge Partners
- Government Cloud

### MOBILE FREIGHT
- Performance Optimization
- Analytics Dashboard
- Software Applications
- Enterprise IT
- Cybersecurity

### AIRPORT, CARGO & PAX. OPERATIONS

### FLIGHT OPERATIONS

<table>
<thead>
<tr>
<th>HON TRACKING SOLUTIONS</th>
<th>WAREHOUSE &amp; PARTS LOGISTICS</th>
<th>MRO</th>
<th>WORKERS, DEVICES &amp; DOCUMENTS</th>
<th>MOBILE FREIGHT</th>
<th>AIRPORT, CARGO &amp; PAX. OPERATIONS</th>
<th>FLIGHT OPERATIONS</th>
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<tr>
<td>GoDirect™ Passive RFID</td>
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<tr>
<td>GoDirect™ Active RFID</td>
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<td>✓</td>
</tr>
<tr>
<td>GoDirect™ Active RFID w/ GPS</td>
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<td>Connected Freight (Bluetooth)</td>
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Tinker Solution

Tinker has partnered with Honeywell to implement a series of Energy Savings Performance Contracts (ESPCs) to upgrade infrastructure and equipment. ESPCs help fund upgrades, using annual energy and operational savings generated by more efficient systems and processes. Honeywell guarantees the savings, eliminating the need for taxpayer dollars or upfront capital investment by the Air Force.

The most recent ESPC project is set to save the Air Force more than $649 million in energy and operational costs over the life of the contract.

The Benefits

- Reduced energy consumption 23% - $20.5M annual savings
- Net operational cost savings improve OC-ALC’s rate structure and competitive position
- Enhanced production reliability in critical steam-fired processes, compressed air systems, and painting facilities.
- High-efficiency infrastructure, including lighting, heating, ventilation, and air conditioning.
- Upgraded building controls provide a more holistic view of facility-wide operations.
- Improved work environment
**THE NIAGARA FRAMEWORK IS AN “OPEN” RMF COMPLIANT AUTOMATION INFRASTRUCTURE USED IN HUNDREDS OF THOUSANDS OF FACILITIES AROUND THE WORLD.**

Niagara helps institutions address energy savings, resource planning, usage and threat management (“lockdown events”) in one secure software platform that sets the standard across diverse entities.

<table>
<thead>
<tr>
<th>HVAC</th>
<th>SAFETY AND ACCESS</th>
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</thead>
<tbody>
<tr>
<td><img src="image1" alt="HVAC" /></td>
<td><img src="image2" alt="Safety and Access" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>LIGHTING, POWER AND WATER</th>
<th>OCCUPANCY, USAGE AND CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Lighting" /></td>
<td><img src="image4" alt="Occupancy" /></td>
</tr>
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</table>

- People Detector
- People Counter
- Humidity Levels
- Environmental Monitors
- Noise Levels
# Digital Defense – VOC and Use Cases

## Keep Systems Operational, Effective And Safe

<table>
<thead>
<tr>
<th>Role</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Director of Maintenance</strong></td>
<td>“Some of our processes are from 1950s”</td>
</tr>
<tr>
<td><strong>Maintenance Engineer</strong></td>
<td>“I have a system and a process today but it’s down 30% of the time and it doesn’t integrate with ERP”</td>
</tr>
<tr>
<td><strong>Finance Leader</strong></td>
<td>“I don’t know what my inventory level should be”</td>
</tr>
<tr>
<td></td>
<td>“For a base our size, we spend too much on energy?”</td>
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</tbody>
</table>

## Ensure Rate Readiness

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<th>Role</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Director of Maintenance</strong></td>
<td>“I have 200 hours a year allocated to trying to find parts on base”</td>
</tr>
<tr>
<td><strong>Maintenance Engineer</strong></td>
<td>“I don’t know when I’m going to get my parts: has the supplier even shipped them?”</td>
</tr>
<tr>
<td><strong>Finance Leader</strong></td>
<td>“I have 15% - 25% location error today”</td>
</tr>
<tr>
<td></td>
<td>“I will never hit 80% rate readiness if I can't find the parts”</td>
</tr>
</tbody>
</table>
HONEYWELL FORGE FOR DEFENSE is a secure and robust nose-to-tail data ingestion platform for supply chain processes that analyzes and unlocks critical performance and operational indicators in operations maintenance, safety, depots, warehouses and RMO facilities, enabling services to rapidly make improvements to operational inefficiencies.

DATA INPUT

- Messages
- Data
- Delays & Cancellations
- Fault Data
- Operational Plans
- Performance Reports
- System Performance Reports
- Operations System
- Maintenance Tech Logs

DATA INSIGHTS

HONEYWELL FORGE

EFFICIENT PARTS HANDLING

PREDICTIVE MAINTENANCE

EFFICIENCY

OPTIMIZATION SECURITY
Q&A