



Closing the data gap

Transforming physical space into SmartSpace®

AUTOMATED PROCESSES

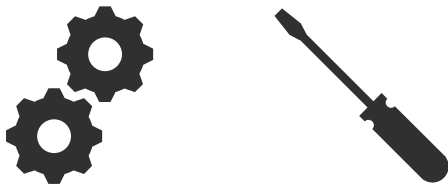
The performance of your process is defined by the **state of the machines** that complete the tasks

VS

MANUAL PROCESSES






Process performance is defined by a complex series of physical movement and interactions of people and assets

Processes involving **moving assets, devices and people do not readily transmit data** and fail to report true process status or detect errors



Critical data gap

Manual processes under-perform due to **five root causes**

-  **LOCATION**
Things are missing or they're in the wrong place
-  **INTERACTION**
Two or more things are together or not together
-  **COUNT**
There are too many, or too few things in a certain place
-  **TIME**
Something is in a space too long, or not long enough
-  **SEQUENCE**
Things are happening in the wrong order

MRO Industry challenges



Macroeconomic Pressures

Increasing	Decreasing
Geopolitical Instability	COVID Impacts
Inflation	Consolidation
Interest Rates	Fleet Plans/Strategies
Fuel Prices	OEM Presence



MRO Industry Disruptors

1. Maintenance tech labour shortage
2. Labor/material cost management
3. Sustainability imperatives
4. Reduced supply/demand
5. Business impact of oil prices/interest rates



Traditional MRO inhibitors

1. **Insight:** Data often missing, out-of-date, incorrect, or invisible to users
2. **Process:** Manual, paper-based processes prevent automation
3. **Planning:** Highly variable tasks and fragmented execution



Digital innovation in MRO

Complex manual processes compounded by a shortage of labour, and increasing cost of labour and materials, means the potential for transformational savings are significant



Material management

- **5-15% savings** on inventory holding cost
- **5-10% reduction** in material purchase costs
- **20% reduction** in expedite/AOG (Aircraft on the ground) costs



CAMO (Continuous Airworthiness Management Organisation)

- **8-10% reduction** in maintenance cost and demand through better data flow to Maintenance Programs
- **30% reduction** in Technical delays through better decision making & troubleshooting (including 1st time fix)



Operational improvement

- **15-20% improvement** in shopfloor efficiency, through workflow planning and automation
- **10-15% improvement** in lost time through information provision at point of use

Source: Oliver Wyman Survey

Digital transformation is challenging traditional approaches, processes and performance levels

Critical MRO digital transformation enablers

DATA



Big data analytics

- Data visualization and data analytics
- Computerized Maintenance Management
- Intuitive documentation/log search
- Digital Twins
- Optimization (dynamic operational deployment)



AI

- Predictive Maintenance
- Bots and artificial intelligence
- Smart procurement/inventory
- Ambient documentation

Impact: Reduce MRO operations lead time, documentation volume, improve decisions

PROCESS



Industrial Planning

- Comprehensive digital tool support for planning (end-to-end across value chain)
- ERP & MRO IT



Paperless/digitized

- Technical data storage
- Supply chain connectivity
- Digitization of customer information (CMDB)

Impact: Improve process efficiency and reduce maintenance costs and downtime

AUTOMATION



IoT

- Data generation from sensors



AR /VR

- Enhanced reality; Connected tools
- Real-time view on relevant information



Robotics

- Automatized inspection/repair
- Automated parts and tool movement

Impact: Improve maintenance operations and reduce parts costs

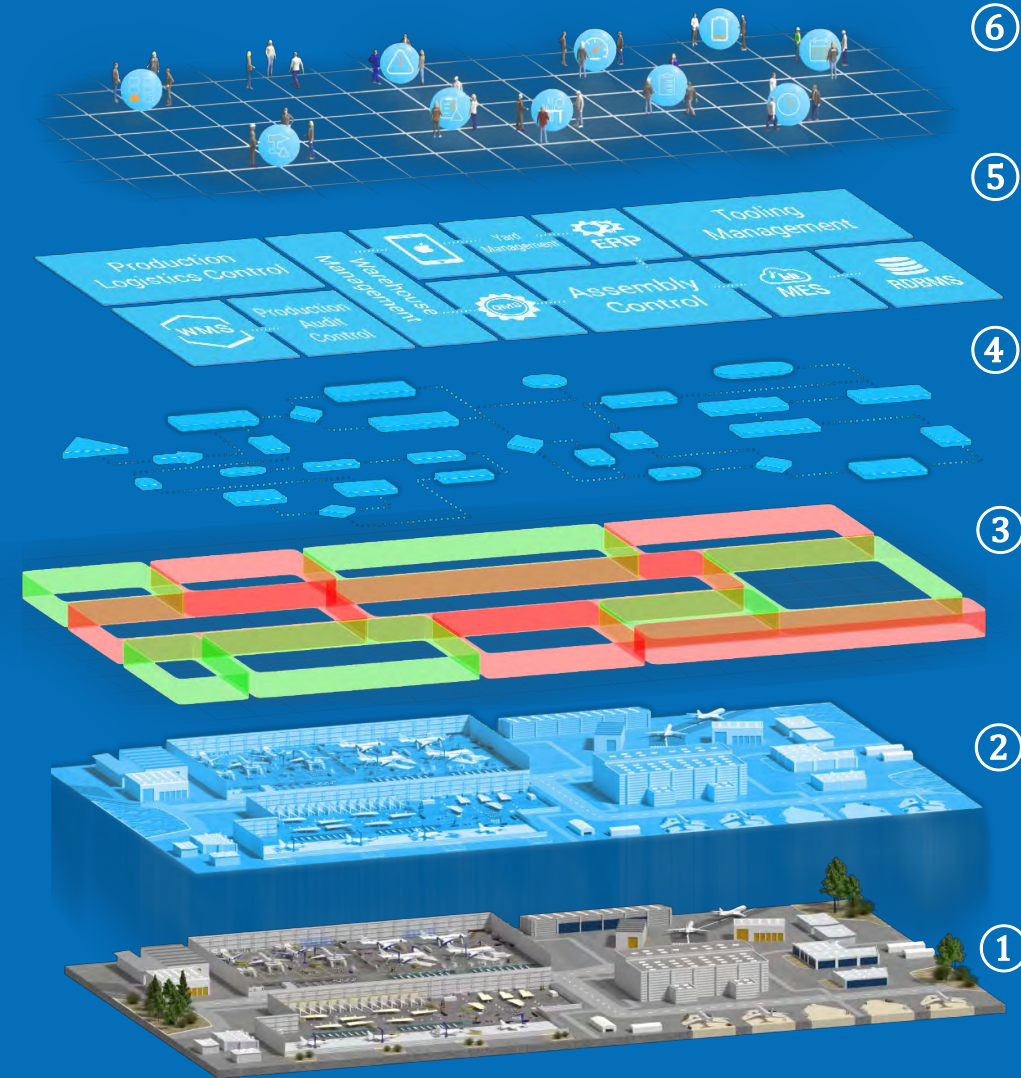
Creating smart MRO spaces

Many real-world processes involve unconnected moving assets, devices, and people that do not readily transmit data.

Closing this data gap is critical to uncover the true, real-time status of processes, identify hidden inefficiencies, and prevent errors.

Ubisense SmartSpace® can sense and respond to real-world events, making even the most complex processes visible, measurable, and controllable at scale.

- ① **Capture a real-world view** of the hangar environment where work orders are completed
- ② **Create an exact digital representation** of space to enable precise location tracking
- ③ **Create virtual zones** within which tasks, tools, material and technicians can be viewed
- ④ **Add a logic layer** to capture and measure performance against the defined MRO process
- ⑤ **Integrate to existing business systems**, e.g. ERP, MRO, HR, for bi-directional data updates
- ⑥ **Provide role-based insight** with interactive reporting and business information dashboards



Process monitoring with Ubisense

Complete automated end-2-end visibility of every stage of production or maintenance

Increase visibility and streamline operations

Enhance existing production control systems.

Traditional systems are often limited in their ability to keep up with the dynamic, complex demands & disruption of MRO task management

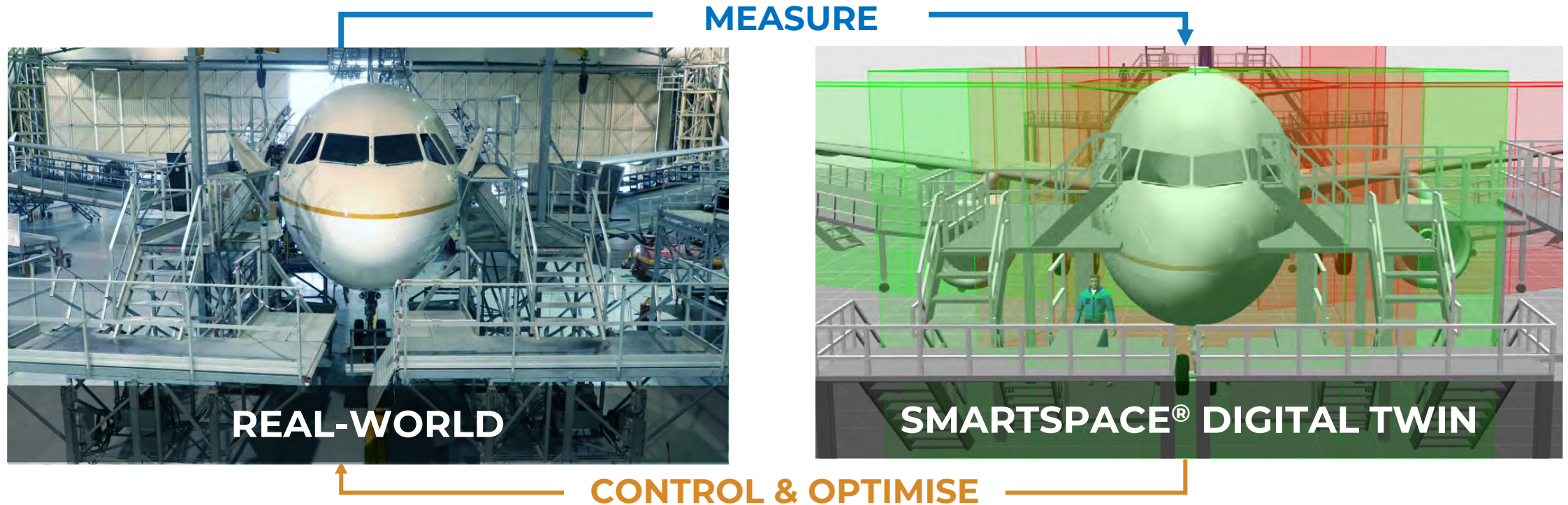
Take control of operational evolution. Enhance ERP vendor ecosystem capability with hidden process data & insight

Augment operational capabilities. Bring People & Technology expertise together by accelerating & simplifying new application development



Creation of real time process Digital twin

Ubisense uses location and identification sensing technologies combined with a software platform to create a real-time Digital Twin of the MRO environment



This supports improved decision making, continuous improvement, and the ability to drive control back into the MRO environment



Transform MRO operations

Unlock the hidden value of operational data to enable digital transformation

Control

- Operator Check-in & Check-out
- Tool Catalogue and Booking Management
- Kitting Control and Management
- Safe Work Zone and Lock-out Tag-out
- Aircraft and Equipment Collision Avoidance



Visibility

- Operator Time in Process Monitoring
- Large Tooling Management
- Small Tooling Management
- Parts Logistics Management
- Maps for finding WIP and assets
- KPI dashboards

ONE PLATFORM DELIVERS A WIDE SPECTRUM OF
LOCATION-DRIVEN MRO APPLICATIONS

Audit & Compliance

- MRO Task Digitisation and Management
- Digital Work Processes and Instructions
- Advanced Analytics and Reporting

Transforming physical space into SmartSpace®

Turn ideas into outcomes...one process at a time

Value is layered over time

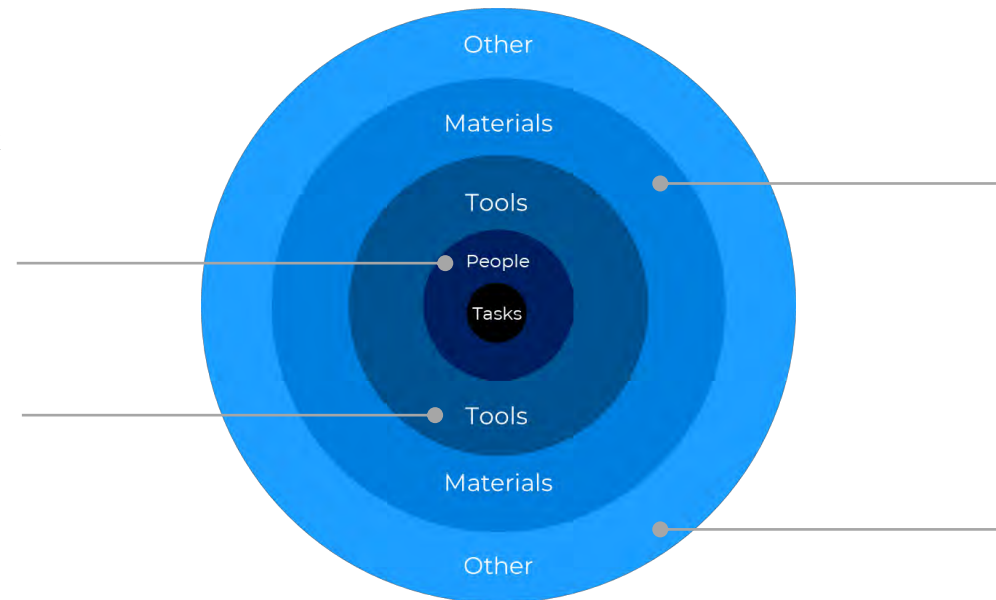
Start by digitising task and people-based process, then fold in additive solution capabilities for tooling, logistics, and safety use cases that integrate with the same base tracking infrastructure.

Layer 1

- Optimized workforce utilization
- MRO Task Digitization and Digital Task Boards
- Working Time Tracking
- Work Scheduling and Management

Layer 2

- Large Tool, Equipment Visibility
- Worker Safety & Process Compliance



Layer 3

- Parts and Materials Logistics Control
- Inbound logistics, inventory control
- Production order & kitting control, incl. partial kits
- Removed part tracking and maintenance control
- MRO Plan optimisation and automated dependency checking

Layer 4

- Tool booking control and storage management
- Small Tooling Track & FOD Reduction
- Aircraft and Equipment Collision Avoidance



Turning ideas into outcomes

Dynamic management of task lifecycle and its performance

Digitize task management & measure productivity



Import and manage MRO tasks

Ensure safety & compliance through automated monitoring & alerts

Real-time map with alerts



Continuously monitor tool activity to ensure quality, safety & compliance



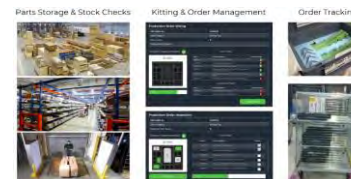
Location & movement of tools visualized

Rapidly identify & find Ground Equipment (GSE) indoors / outdoors



Visualize GSE location & movement

Part & component logistics to expedite re-assembly processes



Logistics applications for MRO

Work order tracking for component MRO reduces cycle times



Order tracking & flow

Identifying invisible process gaps & automating decisions or enabling better decision making





Thank you

Visit us on **stand #446** to learn how we can help you bridge your data gaps and make MRO SmartSpace® a reality for you.