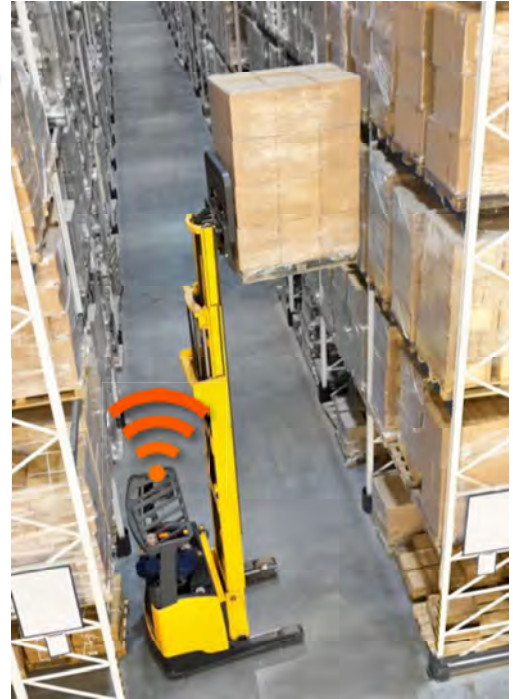# SMARTER SERVICES FOR INDUSTRIAL AND WAREHOUSE MANAGEMENT APPLICATIONS

TRILOGIS BOX^3 ALLOWS SMARTER ASSET TRACKING & MAINTENANCE IN THE INDUSTRIAL & WAREHOUSE DOMAIN

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Real-time asset management and maintenance through RFID and RTLS within the industrial and warehouse market

The solution by Trilogis allows compliancy with prescriptions of the 1989 Directive on the protection of health and safety at work (89/391/EEC) which lays down basic principles for all sectors of activity – in particular the general responsibilities of employers for the safety and health of their workers.

Trilogis' Box³ client showing a map with location of assets

Rising complexity is increasing the chances of delays being introduced within daily operations due to several factors: 1) frequent reconfigurations of production chains, which may require finding and moving or re-configuring machinery; 2) unexpected faults or unplanned machinery maintenance, which could cause downstream delays; 3) difficulty to find documentation related to specific machinery, device or goods needed for operational or maintenance purposes.

Production and management processes within industrial sites and warehouses are becoming increasingly complex due to the increasing adoption of lean production methodologies, to the availability of re-configurable manufacturing plants and real-time warehouse management systems.

Today, reconfiguration of production plant layouts as well as location of equipment, raw material or goods are often carried on without any specific IT tools. Maintenance processes, are often carried on through the use of basic IT tools (e.g. spreadsheets), while documentation of maintenance and re-planning activities are often carried on manually.

This can obviously cause human errors, with consequent delays to operations and costs:

• Equipment, machinery, goods may be placed at the wrong location, with additional effort to locate it.
• Maintenance of machinery or tools may be carried on inconsistently.
• Maintenance documentation may not be properly stored and made easy to retrieve for future use.

Trilogis delivers an integrated solution which allows real time location and management of assets (vehicles, equipment, raw material, goods, etc.) to monitor where they are located and to manage their maintenance state.

This is done by integrating Trilogis Box³ software for asset management & maintenance with Real-Time Locating System (RTLS), to deliver accurate control over the fixed and portable assets and their thorough maintenance.

The solution supports automatic scheduling of maintenance tasks across different maintenance teams. Operators can use mobile devices to be guided to the location of an asset and be guided through the list of activities planned for the maintenance of that specific item.

By running Box³ on mobile computers or Enterprise smartphones/tablets, operators can sign-in and sign-out automatically when starting or completing a maintenance task by simply scanning the RFID tag attached to a device.

All maintenance operations can be certified, thus bringing to improved operations, efficiency and safety as well as reduced costs.

In addition, operators can use Box³ to retrieve documentation, the full history of maintenance activities carried on the given asset etc.

Managers can extract Key Performance Indicators (KPI) from asset management and maintenance processes in order to optimise operations and reduce costs.

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Real-time location and maintenance of assets

Box[3] can automatically send alerts whenever maintenance of a given asset is due.

With Box[3] asset managers and maintenance engineers can define the context (the "what") to be managed/maintained (through an easy-to-use configurator). They can also define the maintenance parameters, allocate and schedule maintenance teams, have a real-time picture of asset management and maintenance activities, handle requests (through ticketing), have integrated access to documentation of each asset. The system allows automatic generation of maintenance certification and custom dashboards related to any specific information of relevance. The system allows real-time indoor and outdoor localisation (within an interactive map) of moving and non-moving assets, through use of active tags.

By attaching localisation tags to assets (e.g. machinery, device or goods), Box[3] can locate those assets, infer usage patterns, derive indicators essential to assess their actual levels of use and start maintenance activities.

Engineers and workers can use Box[3] mobile or web client to see where each item is located.

Onsite operators can automatically receive maintenance jobs on their mobile devices, access onsite all the documentation available for the given asset, request re-scheduling of maintenance and send maintenance data.

The system is already in use in mission-critical environments, including large utilities.
Once an asset or equipment is found, he or she can start and close the maintenance by scanning the RFID tag on the asset.

Timestamps are recorded automatically and used to generate –in a completely automatic way- maintenance certificates including details of the operators, location and time, the full set of tasks the operators have carried on as well as any other information that is required, as defined by the asset and maintenance manager.

As a result, asset management and maintenance activities can significantly benefit from increased operational capabilities. Further, Box[3] increases safety of operations (e.g. generating alerts when maintenance is due), and, more generally, it solves the "invisibility" problem.

Box[3] has been engineered to be vendor-neutral allowing for high scalability through a number of different location technologies, for instance Wi-Fi, Bluetooth 4.0, beacons, Ultra Wide Band – UWB, or any solution compliant with the ISO/IEC 24730-1:2014 standard on "Information technology — Real-time locating systems (RTLS)".

Use with RFID technology

Whenever real-time location of asset is not required, for instance for non-moving pieces of equipment, Box[3] can use RFID tags, printed by RFID printers. By running Box[3] on mobile computers or Enterprise smartphones/tablets, users can scan the RFID tag attached to any piece of equipment, to:

- Access documentation (operating instructions, certifications, etc.).
- Perform scheduled or preventive maintenance.
- Access its maintenance history.
- Check the list of accessories.

Any maintenance task carried on onsite becomes immediately visible to the maintenance management through a web-based panel.

A dashboard provides full situation awareness of various maintenance activities.

Managers can use Box[3] to retrieve the number of spare parts required for future maintenance, thus facilitating accurate budget planning and optimising procurement.

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Improved efficiency and operations within industry and warehouse facilities

Typical facilities

- Production, manufacturing sites and other industrial sites.
- Warehouses.
- Utilities (gas, electricity, water).

Target users

- Operators, who need to locate a device, or any other item.
- Engineers, who need to locate devices (e.g. in case of production line reconfiguration).
- Engineers in charge of maintenance of devices and machinery.
- Site managers, who need to improve use of resources (human & devices) through analysis of spatial distribution.

Integration with IT systems

The solution features different modules for integration with existing IT services, e.g.: SAP, MS SharePoint or AlFresco (document man.), Qlick or Apache Pentaho (business intelligence), and other major enterprise software.

Advantages

- Full certification of the maintenance history.
- Reduction of "asset invisibility".
- Reduction of over-procurement.
- Improved equipment inventories.
- Improved asset tracking and management.
- Maximisation of usage rate.
- Support for location intelligence.
- Lowering of costs.
- Reduce capital investments.
- Increased control.
- Increased safety through better control of equipment and machinery lifecycle.
- Staff safety and workflows optimisation.
- Increased quality of services.
- Increased quality activity time.
- Higher operational efficiency.

Automatic notification: When maintenance is due, the system automatically generates the job order and notifies the operator in charge.
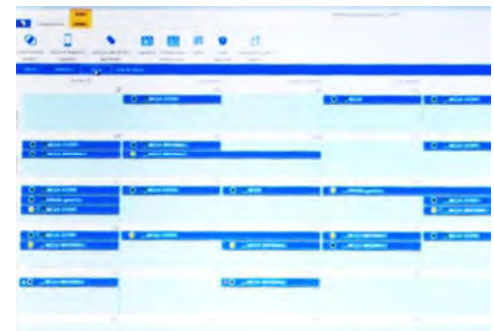
Trilogis' Box^3 client showing a calendar with scheduling of maintenance tasks among different teams

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