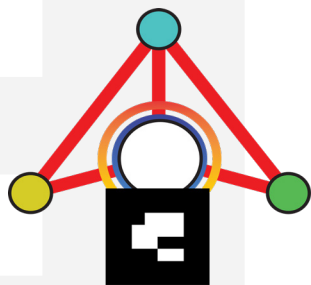# How to minimise 3 major time wasters in asset maintenance with ARDI-AR™

Abstract

Maintaining an enterprise's assets is a balance between cost and operational integrity. There are many steps to consider in optimising effective maintenance. This document shows how augmented reality can save time in three key areas.

Augmented reality can reduce the cost of planned and unplanned maintenance tasks. This easy to use technology can be installed on a worker's smart device, transforming it into a powerful set of maintenance site tools.

Introduction

All industrial enterprises grapple with how to reduce maintenance costs. Using ARDI and Augmented Reality, we can provide these industries with a solution that may save significant sums of money.

The industrial, mining and infrastructure sectors are looking for technology and Industry 4.0 to help reduce costs and improve efficiency wherever possible in both planned and especially in breakdown maintenance. Examples of these initiatives include using predictive tools and analytics.

Optrix has identified three key time consumers that occur in the *execution* of planned and breakdown maintenance tasks. This document identifies how ARDI-AR can assist in reducing these time wasters and improve operational efficiencies.

Using ARDI-AR can help to:

- improve maintenance efficiency
- make new and contract staff effective much faster
- make field personnel more independent
- integrate people with your work systems
- speed up fault-finding

Maintenance tasks can be streamlined to lower costs.

Data Gaps Steal Time

Traditional site maintenance activities follow common steps: obtaining information; locating the asset to maintain; performing the task; verifying normal operation is restored; and updating systems to record the task was completed - raising any issues at the same time.

Using ARDI-AR allows you to radically shorten these steps by changing how, when and where information is delivered to your people; ARDI-AR enables processes to be bypassed or accelerated, which is especially useful in breakdown maintenance.

What is ARDI-AR?

ARDI-AR enhances your understanding by laying information over a real-world video. With the ARDI-AR app installed on your phone or tablet, you use your camera to identify assets.

ARDI-AR overlays details that are not visible – pop-up descriptions of the equipment and for example, live information about the measurements that are being made.

How does ARDI-AR work?

ARDI-AR's server is connected to your SCADA system, historian, and other industrial data sources. It is also connected to sources of documentation such as procedures, work orders and instructions.
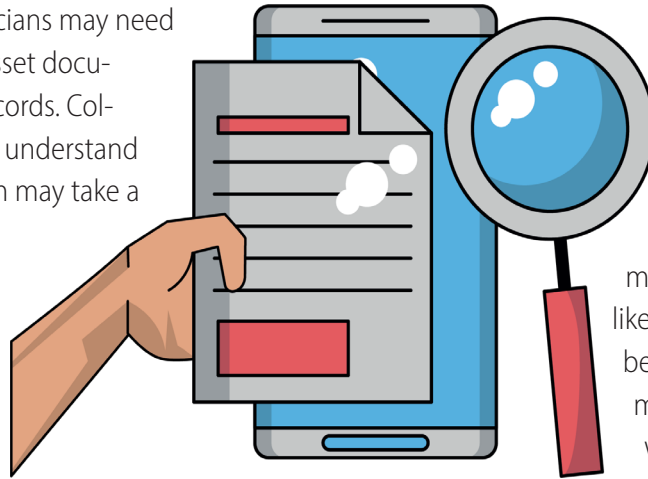
Markers are placed on your equipment which are recognised by ARDI-AR on your phone, tablet, or other portable device. The markers allow ARDI-AR to know where you are and provide contextual information from any of these sources.

Time

Update

Verify

Task

Locate

Copy

W/out
ARDI

Verify

Task

Locate

With
ARDI
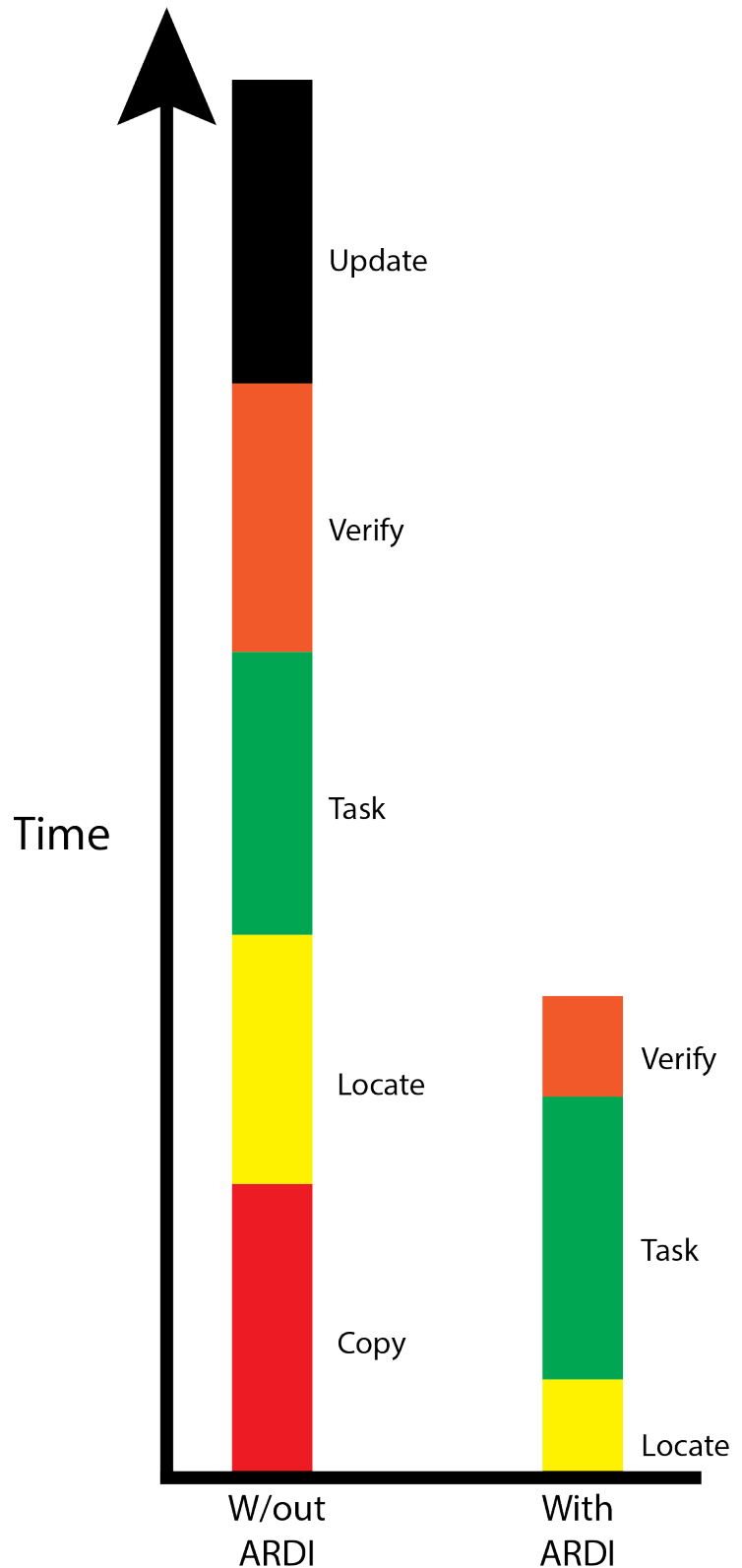
Time Thief 1: Acquiring Information

When a problem occurs, technicians may need access to information such as asset documentation and maintenance records. Collecting everything they need to understand the equipment and the problem may take a considerable amount of time.

Information required to perform maintenance tasks is often stored at different locations and in different formats. It may also be difficult to access or time intensive to make copies. Because of this, users often rely on printed, and sometimes out-of-date procedures instead of using the latest versions.
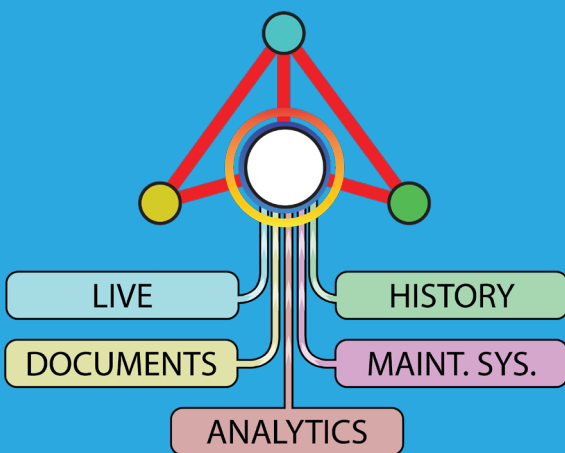
Another issue may be that the maintenance task has been learnt through word of mouth, which increases the likelihood of procedures not being followed. Even if the information sources are organised well, moving between them costs valuable time. None of this is conducive to quickly handling a breakdown maintenance problem.

Solution

ARDI-AR solves these issues by providing the required information at your fingertips. This includes not only documentation, drawings, specifications, maintenance records and calibration sheets, but live data values such as temperature, pressure, and flowrate. You can also view graphs of recent trends and check alarms.

knowledge capture systems. If systems do not exist, ARDI can link to ad hoc storage facilities to provide consistent access to maintenance information.

Each of the knowledge capture systems can be maintained independently, with the ARDI system's footprint being minimal. Other than the registration of new assets, there is little to do to keep ARDI up to date.

These features enable maintenance personnel to begin their job much sooner and slash the time spent on finding information for breakdown events. ARDI provides valuable knowledge quickly, which allows self-reliance at site tasks.

This combination of features enables a technician to begin a job sooner.

LIVE

HISTORY

DOCUMENTS

MAINT. SYS.

ANALYTICS

Operators can rely on this information because all the data is sourced directly from the 'point of truth' – the existing

Time Thief 2: Locating Assets

Locating the asset that needs to be worked on may be simple for personnel familiar with a site, however the fact is that sites are losing experienced staff, and tasks are being entrusted to less experienced personnel.

To lower maintenance costs, the time taken to locate the asset and its associated equipment needs to be minimised. It's also imperative that a worker is certain they're maintaining the correct asset.

ARDI-AR delivers a solution for the problem by providing specific tools to locate and confirm the correct asset.

Solution

If you can see an asset, you identify it by scanning its nearby ID marker, but what if you need to know where the asset is located in your facility?

With ARDI, you can search for assets using any of the details the system has access to. This can include being able to find an asset based on its:

- tag number, name, description, service
- model number
- maintenance code, CMS description
- SCADA name
- type

When you have selected the asset, you can present its location on a scrollable, zoomable map that will show you where the asset is.

When you select an asset, the connections to other associated assets are also identified. This is discussed in greater detail on the following page.

Knowledge about these other assets may be required to complete the maintenance tasks, e.g., isolation devices. Having direct access to the locations eliminates the need to refer to other staff or consult other documents distributed around the worksite.

Faster asset location equals a reduction in downtime and costs.

Time Thief 3: Seeing the Big Picture

Maintenance personnel often need to understand how assets are connected to perform maintenance tasks. Access to all the relevant information will reduce the time taken to return the asset to 'ready for service'.

If there's an issue causing a detrimental effect on operations, or a full stoppage due to an asset fault, time is critical. ARDI-AR's features are specifically aligned to assist in reducing the time to re-establish normal operation.

Solution

ARDI knows how your assets are connected. This not only includes physical connections, such as pipes, wires, and conveyors, but logical connections, such as process flows and your plant architecture. Logical relationships may include which assets control others, which order they start in, and what the modules are before and after each asset.

Understanding asset relationships can help with investigating faults or deciding if you need to narrow or expand your focus. They also give you additional benefits, because ARDI can pass information between related assets. For example, if you're looking at an instrument that requires compressed air to work effectively, ARDI-AR can present the temperature and pressure delivered from upstream sensors without your having to find them yourself. When you view the asset in ARDI-AR you

Knowledge of relationships can reduce the time it takes to find faults.

will be provided with key information that relates to this asset's performance.

ARDI-AR can also show you upstream alarms – alerts from other assets that might be causing issues. If a drive isn't working, you may quickly see that the circuit breaker is tripped. If a machine is not starting, you can see the alert that tells you the network router it's connected to has failed. ARDI-AR presents this information at the press of a button, at the asset.

Conclusion

Sourcing information for, locating, and understanding relationships between assets are three areas of maintenance that can cost workers significant amounts of time.

Empowered with ARDI-AR on their mobile phone, maintenance personnel can easily:

- Locate and identify devices
- Retrieve live data at the asset
- Access loop diagrams, P&ID drawings, specifications, calibration sheets at the asset
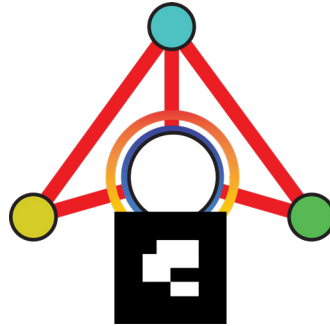- Verify isolation point locations
- Diagnose issues

These features give maintenance staff greater independence, knowledge where it's needed and most importantly, power to perform key maintenance tasks more efficiently.

To learn more, go to www.optrix.com.au.

Independence + Awareness

Saves Time

Optrix utilises the latest technology to create new ways to see your data as it applies to the real world. ARDI provides strong Industry 4.0 alignment and is designed to enhance the implementation of IIoT technology and applications.

To find out more about how ARDI-AR™ can help you to minimise three major time wasters in asset maintenance go to *www.ardi.optrix.com.au.*