

Test and Measurement Obsolescence

Picture this:

Your boss walks into your office and tells you that one of the old test stations that has not been touched in a year, has no documentation or source code and is starting to act up and not work anymore. You have no idea what the test station is supposed to do and they expect you to figure it all out in less than a week. To top it all off you already have 2 other major projects that can't be slowed down. Where do you even start?

Obsolescence in test and measurement automation systems can be a significant concern for engineering managers, as it can impact the accuracy, efficiency, and availability of spare parts and result in increased maintenance costs or not even being able to test at all. Many modern test and measurement systems are controlled by software, which can also become obsolete over time. This can be due to technological advancements, changes in industry standards, or vendor discontinuation, as well as other factors. In this whitepaper, we will discuss the causes and impacts of obsolescence in test and measurement automation systems, as well as strategies for managing and mitigating these challenges.

Causes of Obsolescence in Test and Measurement Automation Systems

There are several factors that can contribute to the obsolescence of test and measurement automation systems:

- **Vendor discontinuation:** Sometimes, vendors may stop producing or supporting certain test and measurement automation systems, making it difficult to obtain replacement parts or service.
- **Supply Chain Issues:** Recent events have caused many supply chain issues not being able to get components to build the board or equipment. This also may cause the vendor to discontinue the board outright and offer no drop-in replacement.
- **Changes in industry standards:** Industry standards for testing and measurement can change over time, leading to the obsolescence of older automation systems that are not compliant with the new standards.

- **Support for the software controlling the system:** Anything before Windows 7 no longer has updates and will need to be upgraded to remain on the company's network.

Impacts of Obsolescence in Test and Measurement Automation Systems

One specific issue that can impact the obsolescence of software-controlled test and measurement equipment and automation systems is the expiration of cybersecurity support. Many software systems, including those used to control test and measurement equipment, are supported by the manufacturer for a certain period of time. When this support expires, the software is no longer updated with security patches and other important updates, leaving it vulnerable to cyber threats. This can lead to serious consequences, such as data breaches and system failures.

The obsolescence of test and measurement automation systems can have a number of negative impacts on an organization, including:

- **Increased maintenance costs:** As test and measurement automation systems age, they become more prone to failure and require more frequent maintenance. This can lead to increased costs for repair and replacement parts. Sometimes even resorting to buying used parts from eBay.
- **Reduced efficiency:** Using outdated test and measurement automation systems can lead to slower test times and increased maintenance, reducing overall efficiency and productivity.
- **Incorrect test results:** If test and measurement automation systems are not capable of accurately testing and measuring current devices and systems, it can lead to incorrect test results. This can have serious consequences, such as the release of faulty products or the failure of mission-critical systems.
- **Vulnerability in cybersecurity:** IT may force the test system off of the network due to aging operating systems. This may solve the problem for the short term but also limits the system from important features like database, reporting, and new features.

Strategies for Managing and Mitigating Obsolescence in Test and Measurement Automation Systems

There are several strategies that engineering managers can use to mitigate the challenges of obsolescence in test and measurement automation systems:

Plan for obsolescence: When purchasing new test and measurement automation systems, engineering managers should consider the expected lifespan of the equipment and plan for obsolescence. This could involve setting aside funds for future upgrades or replacements, or considering systems with a longer lifespan or upgradeable capabilities. Keeping an updated set of build instructions, source code, drawings, and user manuals will be key to a smooth upgrade.

When designing a test system documentation plays a very large role in the upgrade path. Creating proper system architecture, software architecture, and product requirements documents will make it much easier to upgrade in the future. Updating electrical and mechanical schematics when changes occur rather than trying to guess what you did 3 months ago.

To address this issue, engineering managers should ensure that they are aware of the expiration of cybersecurity support for all software-controlled test and measurement equipment and automation systems, and plan for updates or replacements as needed. This could involve upgrading to newer versions of the software or switching to a different software system. By staying up-to-date with cybersecurity support, engineering managers can help ensure the security and reliability of their test and measurement processes.

Use a mix of old and new systems: In some cases, it may be possible to use a combination of old and new test and measurement automation systems to achieve the desired accuracy and reliability. This can help extend the life of older systems while still meeting current testing and measurement needs.

Conclusion

Obsolescence in test and measurement automation systems can present significant challenges for engineering managers. By understanding the causes and impacts of obsolescence and implementing strategies for managing and mitigating these challenges, organizations can ensure the accuracy and efficiency of their test and measurement processes. Good planning at the beginning of the project is the most important factor in maintaining a long term solution.