CURTISS-WRIGHT

Total LifeCycle Management

Military Grade Insurance for all Program Phases

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Program Lifecycles Today

Developing, qualifying, and maintaining complex aerospace and defense electronics for service in programs that can last for decades – often far beyond their original planned lifetime – can be costly and complex. Program Managers must deal with many dynamic issues, including rapid technological development, greater use of commercially developed technology, parts obsolescence, supply chain disruption, and limited budgets. All of these threats must be continually mitigated to ensure the success of long-life programs.

Electronics solutions based on commercial-off-the-shelf (COTS) technology provide many benefits compared to custom designs, such as delivering the latest-generation performance, improved affordability, and increased interoperability resulting from the use of open standards. To effectively leverage these rewards, defense contractors must de-risk the short product lifecycles typical of commercial devices to eliminate the cost and time that result from unplanned technology refreshes and system re-qualifications.

The maintenance costs for a long-life program will actually exceed the product's initial cost. That is why today many government programs make lifecycle management a contractual and supply chain compliance flow-down requirement. To be successful, lifecycle management and supply assurance strategies for long-life programs must be proactive.

How to Address These Challenges

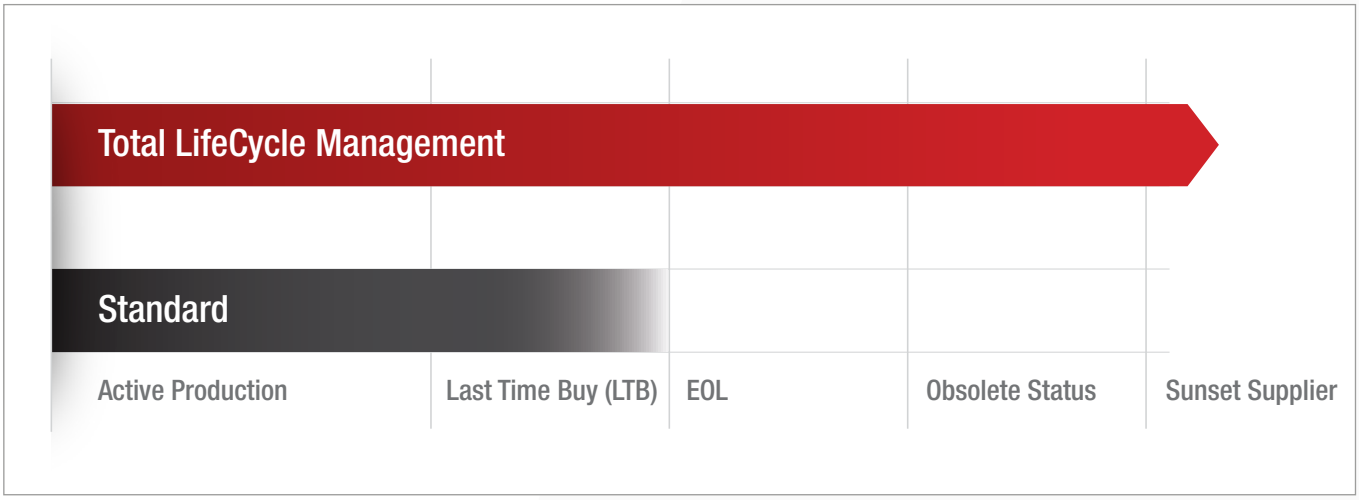
To meet the unique requirements of the Defense market, Curtiss-Wright pioneered the development of a comprehensive suite of services. Total LifeCycle Management™ (TLCM), safeguards military programs and mitigates any challenges associated with leveraging COTS technology for long-life, mission critical systems.

Longevity is taken into consideration at the concept phase, prior even to the selection of components and vendors. During the production phase, the optimization of longevity continues, whether decisions have to be made about alternative components, or a product must be redesigned. Curtiss-Wright's commitment to longevity continues throughout the life of the program to ensure the ability to support long-term builds and repairs.

For our customers, Curtiss-Wright stays a committed COTS technology partner throughout a product's maturing lifecycle. We work with program teams to help defer technology insertion costs and lower the total cost of ownership. Our proactive, extended approach is why we are able to help protect numerous programs for the entire life of a program, many for well over twenty years and counting. Because Curtiss-Wright plays a leadership role as a supplier of deployable modular open systems we are able to meet the lifecycle needs for new and legacy platforms and programs.

The TLCM Approach

Curtiss-Wright's TLCM services deliver the highest level of program assurance and provide our customers with an uninterrupted supply of critical electronics for the duration of their program. TLCM offers a comprehensive approach to lifecycle management that ensures greater customer engagement and transparency compared to standard support services. TLCM enables customers to defer or eliminate costly redesigns driven by component, technology, process, or test infrastructure obsolescence. By selecting our TLCM services, customers are able to ensure the availability of mission-critical electronics and effectively mitigate diminished manufacturing source and material shortages (DMSMS). In fact, the effectiveness of TLCM for ensuring the longevity of aerospace and defense programs is so well recognized that, for many programs, TLCM is actually a specified requirement for COTS-based products governed by source control drawings (SCD), safety-certifiable requirements, qualified configuration-controlled products and obsolescence management.



COTS Product Lifecycle

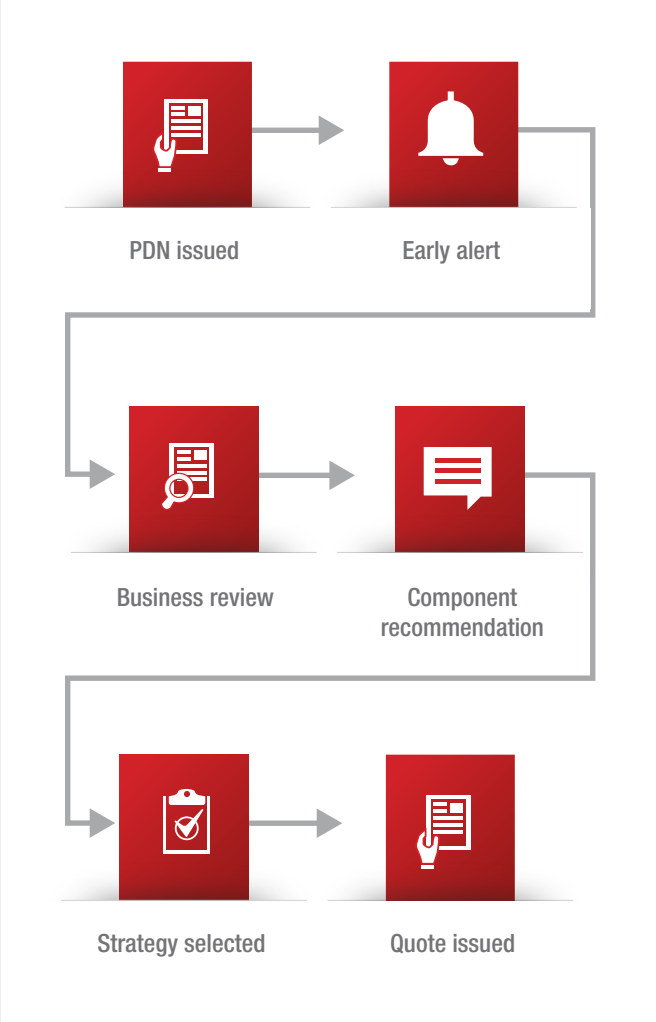
The TLCM Approach consists of four key areas: Assured Component Availability (DMSMS), Product Configuration Control, Direct Access to Lifecycle Specialists, and Test Infrastructure and Expertise.

Assured Component Availability (DMSMS)

Curtiss-Wright recognizes that, despite the best efforts in component and vendor selection, the lifecycle of electronic components can be unpredictable. That's why TLCM includes regular bill of materials health reports that detail current and predicted component obsolescence and component last time buy (LTB) information at the integrated circuit level. These reports also identify risk mitigation strategies. In between reports, if a supplier Product Change Notice (PCN) or Product Discontinuation Notice (PDN) is received, Curtiss-Wright's engineering community generates a 'Material Status Change Notice' in the Document Center of the TLCM web portal. This makes sure that customers are informed in real-time of any component lifecycle events.

A system integrator must select a partner that can effectively manage DMSMS challenges. Curtiss-Wright's product marketing, program management, sales representatives, and TLCM specialists all play a critical role in predicting product needs. In the event of a lifetime buy notice, available component inventories are finite. TLCM customers have an advantage because they receive advance notice which gives them the opportunity to secure and protect components.

Curtiss-Wright's expansive warehouse includes a separate area for customer-owned inventory. The company takes responsibility for maintaining and storing components and paperwork. Dedicated warehouse staff manage and maintain parts in this secure location to ensure quick builds and repairs.



Component Obsolescence Process Flow

Product Configuration Control

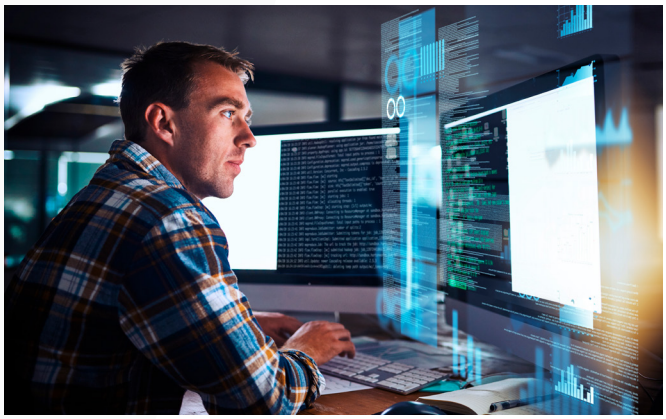
Configuration changes and component obsolescence issues that arise during a product's volume production phase need to be well understood. For example, program authorities must be able to determine the timing of a specific configuation's lock-down or know when to migrate to an alternative solution. The ability for a customer to approve or reject Curtiss-Wright's engineering change proposals can be critical for meeting specific program requirements and avoiding costly requalification activities. With TLCM, clients have control over a product's configuration, including the authority to approve or reject all Major (Class I) and Minor (Class II) Engineering Change Orders (ECOs) that Curtiss-Wright proposes during the contracted service period.

Programs using safety-certifiable products are notified of product changes via a Product Change Notification (PCN). These customers are able to select the preferred product version. This could mean electing to stay at a system qualified version, strategically migrating to a newer version to benefit from an obsolescence refresh or support increased demand during a planned requalification phase. At its core, safety certifiable TLCM affords customers the ability to maintain a product build status in line with safety certifiable artifacts used in qualification.

Direct Access to Lifecycle Specialists

The Curtiss-Wright team has decades of experience with life cycle management. TLCM customers no longer have to worry about being out of the loop or feeling blindsided by obsolescence notifications or unplanned product changes.

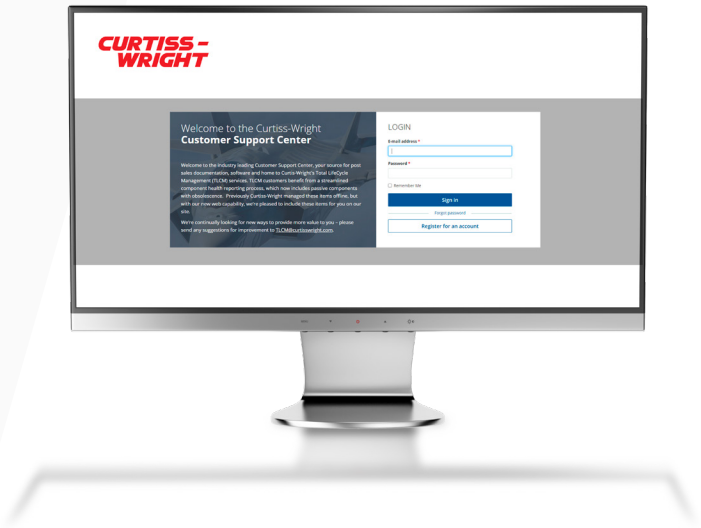
By participating in the TLCM program, customers can allocate their resources to other areas, knowing that industry specialists are proactively monitoring program forecasts, product availability, obsolescence, and proposed product changes.



Test Infrastructure and Expertise

To support legacy and end-of-life products, Curtiss-Wright ensures the continued availability of manufacturing and test expertise and continues to make the necessary investments to maintain the required test hardware (functional ATP) and a reliable test infrastructure. The secure TLCM web portal delivers immediate online access to a wide range of relevant and timely information, including:

- 360° TLCM portal access
- Proposed engineering change orders/ product change notices
- Component health reporting (DMSMS)
- Early alert notifications
- Product longevity
- Manuals
- Software downloads
- Firmware updates
- Pinout configurator utilities
- FPGA loads

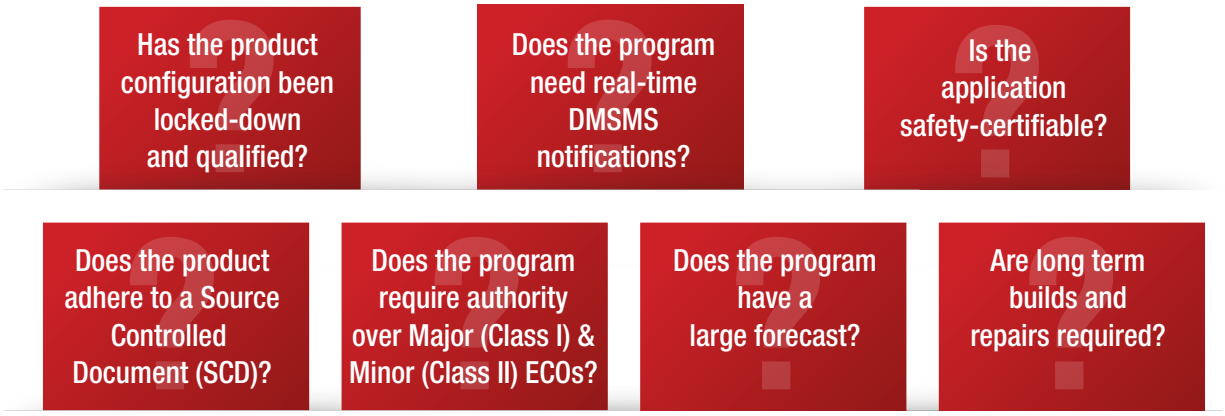


The TLCM portal contains all the information needed for quick and easy access. By providing our customers with complete visibility, businesses stay well-informed and prepared for upcoming changes.

Is TLCM the Right Solution?

While every single customer and program won't need the full range of TLCM product protections, the majority of today's defense programs will. How can one determine if TLCM is the right solution for them? The requirement chart below makes it simple to answer the question.

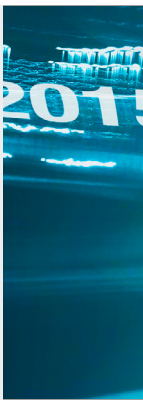
TLCM services are necessary if the answer is "yes" to any of the following questions:



In addition to these requirements, TLCM is recommended for any program that cannot easily support a technology insertion when electronics go EOL.

Go Beyond the Standard with Total LifeCycle Management

Investment Protection & Lifecycle Services	Standard Product	TLCM	Safety-Certifiable TLCM
Access to Product Resources	✓	✓	✓
Product Longevity Solutions	✓	✓	✓
Direct Access to Dedicated Lifecycle Specialists	-	✓	✓
Product Configuration Control (Product Revisions)	-	-	✓
Product Configuration Control (Engineering Change Orders)	-	✓	-
Real-Time DMSMS Alerts	-	✓	✓
Last Time Buy Component Priority	-	✓	✓
24/7 Access to Real-Time Information via TLCM Portal	-	✓	✓
Sustained Manufacturing & Test Infrastructure Availability	-	✓	✓
Bonded Component Storage & Management	-	✓	✓



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