Averna

White Paper

Proligent®

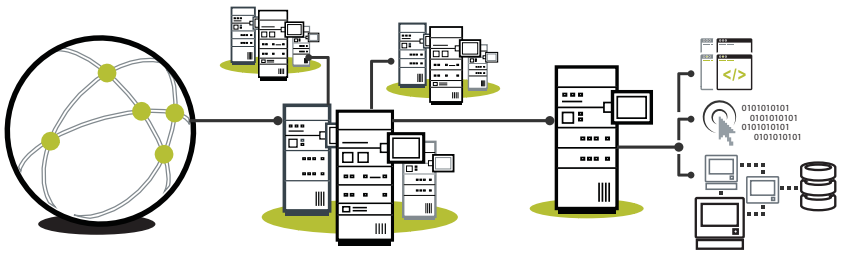
7 Ways a Test and Quality Management Platform Can Improve Your Bottom Line

Determining the ROI of a Commercial Solution

Manufacturers, including original equipment manufacturers (OEMs), spend millions of dollars every year purchasing and managing their test assets and the data they generate – but few of them can be certain that those assets are delivering the desired and needed value. This is hardly surprising, given the complexity, difficulty and scope of the task. Test assets are installed across locations, facilities and business units world-wide, so determining how effectively these disparate and far-flung assets contribute to mission-critical business goals is far from simple. But new, leading-edge test and quality management platforms are emerging that can ensure significant return on investment (ROI) is realized from these assets.

TYPICAL FUNCTIONALITY OF A TEST AND QUALITY MANAGEMENT PLATFORM

- **Test & Quality Analytics:** Enhanced visibility and insight into product quality and process efficiencies throughout the lifecycle and supply chain.
- **Configuration & Deployment:** Mechanisms to synchronize and version-control test assets, in collaboration with other enterprise and engineering systems.
- **Test & Quality Process Enforcement:** Ability to define and enforce test processes for manufacturing test and fail & repair.
- **Test Asset Tracking:** Features to track the physical location and status of assets, in order to optimize their utilization and maintenance.



A typical enterprise test and quality management platform connects and centrally manages advanced product testing components like: equipment/stations, instruments, software and data.

Supply chain executives and other manufacturing stakeholders intuitively understand that such platforms can maximize the value of their test assets and minimize their capital expenditures (CAPEX) and operating costs. But in today's intensely competitive, resource-constrained operating environment – where every investment is scrutinized for its material impact – intuition is not enough. C-level executives and other senior enterprise decision-makers are demanding clear, measurable ROI from every investment – and test and quality management is no exception.

The Evolution of Test and Quality Management Platforms

The most advanced platforms enable manufacturers to move far beyond the historical run-to-failure paradigm. By embracing a more proactive approach to configuring, deploying, controlling and tracking each asset's lifecycle, these new solutions aggregate, communicate and report on enormous amounts of test information from widely disparate sources across increasingly global supply chains. And they give manufacturers something they have never had before: a comprehensive and granular view of their operational processes. This makes it possible to develop and manage a truly agile supply chain, one that can address both problems and opportunities earlier in the design and production lifecycle.

ROI estimates – realistic, defensible measures of the profit-and-loss implications of an investment – are a powerful tool for determining where and how to allocate scarce resources. They are also a very effective means for communicating the value of a proposed initiative to those who must approve capital expenditures and other major operational investments. But until recently, supply chain executives have had difficulty producing solid ROI figures for planned or existing test and quality management implementations.

One key reason for this information gap is that there are myriad enterprise-wide interdependencies of test processes and assets. So, even though test assets have a profound impact on a manufacturer's design capabilities, operational efficiencies, employee productivity, product quality and life-cycle costs, it has been traditionally difficult to quantify these impacts. However, new advanced test and quality management tools have made it possible for manufacturers to make radical improvements in their design, production and supply chain processes. These changes also make it easier to gather metrics while improving quality control, limiting product failures and returns, reducing time to market and, most importantly, cutting costs. Nonetheless, the benefits of test and quality management may still not be clear to some process owners, nontechnical executives, and senior-level business leaders.

One likely barrier to the adoption of commercial solutions is that most established manufacturers already have some sort of in-house application that may seem to be "good enough" for now, or they are content to build one from the ground up by reassigning in-house resources to meet immediate or short-term needs. Executives who take a longer view – such as at the success and profitability of outsourcing non-core business processes like IT and customer support – may recognize that neither of these approaches really meets the company's current requirements – and they certainly cannot address future needs.

Enterprises that have deployed commercial solutions have shown – through their own business-case analyses – that in-house approaches are more expensive in the long term than deploying a mature and scalable third-party solution. However, convincing budget-conscious senior management to spend money on such a solution, without solid ROI figures as evidence, will likely be an uphill battle.

The Business Value of a Commercial Solution

Manufacturers everywhere face relentless pressure to cut costs and are continually looking for efficiency gains in order to do more with less. Every new hardware purchase, every software implementation and every increase in headcount must be clearly justified in terms of its real-world business value before senior management will sign off on it. And in a highly uncertain and volatile world economy, these resource constraints are unlikely to change in the foreseeable future. But senior business management will approve new projects, and the resources needed for them, if they are presented with realistic, credible projections of their bottom-line business value to the company, and particularly the anticipated ROI.

The business value of a commercial solution, of course, will depend on many factors, including the size and distribution of the company's supply chain, its industry, and the regulatory environment in which it operates. A manufacturer of high-end smartphones, for example, may be most concerned about quality assurance because product failures can cause severe damage to a brand's reputation for quality and innovation. A commodity supplier of consumer electronics parts may place stronger emphasis on production efficiencies and delivery times. And a medical device manufacturer, by contrast, will almost certainly view regulatory compliance as one of its most significant considerations.

The 7 Key ROI Factors to Consider

1. **Manufacturing Yield:** Since an advanced platform delivers comprehensive, real-time monitoring and reporting of test and quality data, enforces test and quality processes across the entire supply chain, and centralizes management of test assets, it improves product quality through quicker detection and resolution of design, supply chain and manufacturing issues, and tighter control of test and quality processes and assets.

2. **Scrap Costs:** As manufacturing yields go up due to new efficiencies in multiple aspects of test and quality management, less scrap is produced. For companies involved in high-volume production, this can translate into substantial material, logistics, storage and disposal savings.

3. **Warranty Costs:** A system that includes fail & repair features, real-time analytics and historical data helps improve product designs and quality – which translates directly into fewer product returns.

4. **Capital Expenditures:** Real-time tracking of test equipment inventory and usage makes it possible to identify and manage idle time, coordinate maintenance and relocation activities, and optimize asset usage. The result is that more can be done with existing test assets, and planned capital expenditures for additional test equipment can be reduced.

5 **Test Data Management Labor Costs:** A solution that automatically captures and organizes test and quality information from disparate sources into a centralized decision-support system can dramatically reduce the time spent on manual data collection (including travel), analysis and reporting – which leads to faster identification and resolution of quality issues.

6 **Cost of Ownership:** Manufacturers that have "homegrown" systems must assign considerable internal personnel to design, support and evolve them, and are also exposed to significant risk if the system author or architect leaves the company. By deploying a commercial platform, the company can reduce its internal support requirements and risks – while benefiting from the expertise of test and software specialists who ensure the platform keeps pace with evolving industry needs and emerging technologies.

7 **Research and Development (R&D) Costs:** The acceleration of root-cause analysis at every iteration of product design and every phase of the product lifecycle – as well as speeding up test station development and deployment – leads to quicker new product introductions (NPIs) and time to market, and reduces R&D costs.

Sample Test and Quality Management Implementations

	COMMUNICATIONS EQUIPMENT OEM	MEDICAL DEVICE SUPPLIER
Business Imperative	Cost reductions	Streamline global test activities
Current Challenges	• Existing test engineering, execution and data collection environments are fragmented and maintenance heavy • Significant annual test equipment CAPEX • Extended NPIs with low yields and high scrap	• Poor data management • Lack of product traceability • No process flow control • Not scalable • High cost of maintenance
Desired Benefits	• Reduce test asset CAPEX • Improve yield and reduce scrap • Lower system-maintenance labor costs	• Reduce data management costs • Improve product quality • Reduce cost and risk of regulatory compliance
Annual Savings Forecast	› $10 million	$1.5 million
ROI Estimate	10 months	8 months

Additional Benefits

Not all of the benefits of an enterprise-wide solution are readily quantifiable in terms of ROI – but this does not mean they are not important. Some factors may actually matter at least as much to senior business decision-makers as those that are factored into ROI calculations. Consequently, supply chain executives should not neglect them when defining and communicating the value of a test and quality management platform to other decision makers. These "intangibles" include:

- Improvements in and protection of brand reputation because of product quality enhancements
- Increased sales due to both product quality improvements and quicker time to market
- Increased profit margins due to faster time to volume
- Reduced buffer inventory resulting from higher manufacturing yields
- Reduced regulatory compliance risks and costs due to traceability features

Impact on Profit & Loss Statement

	SOLUTIONS DRIVER	P&L IMPACT
Revenue	Quicker time to market, better reputation	↑
Less: Cost of Goods Sold (COGS)	Higher yield, lower scrap, less CAPEX, lower cost of ownership, faster resolution of issues	↓
Gross Profit		↑
Less: Selling and Administrative Expenses	Lower warranty	↓
Less: R&D Expenses	Faster handoff to manufacturing	↓
Operating Profit		↑

The Bottom Line

When the seven critical decision factors have been identified and quantified appropriately, they can be used in a detailed projection of ROI for a commercially available platform (as compared to an existing or proposed in-house system). The result will be a measurable, defensible analysis of the material profit-and-loss impact of an enterprise-wide test and quality management solution – and a simple way to communicate that value to bottom-line-driven business leaders.

Averna is a premier test solution provider for communications and electronics device makers worldwide, helping them deliver a better end-user customer experience. Averna's clients in the aerospace and defense, automotive, consumer electronics, medical devices and telecommunications and networking industries use Proligent®, RF Test Instruments, and other test solutions to accelerate product development, reduce manufacturing costs, achieve superior quality throughout the lifecycle, and solve critical supply chain issues.

Averna has multiple centers of expertise worldwide, supported by channel sales partners across North America, Europe and Asia. Incorporated in 1999, Averna is a 2012 Best in Test award winner and an Ernst & Young Entrepreneur of the Year® winner, and has been honored as one of the Deloitte Fast 500 fastest-growing technology companies in North America.

2013 DesignVision Award Winner

Proligent Analytics was named most Innovative Verification Tool of the year.

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